

M/049/0011  
Task: 3280  
cc: Lynn  
Tom  
Wayne  
- 0005

**Notice of Intention**  
**To Revise a Large Mining Operation**



**Geneva Rock Products, Inc.**  
**Pelican Point Quarry**  
**DOGM NO. M/049/0011**

*Submitted by:*

Geneva Rock Products, Inc.

1565 W. 400N.

Orem, UT 84057

*To:*

Utah Division of Oil, Gas and Mining  
1594 West North Temple, Suite 1210  
Salt Lake City, Utah 84114-5801

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DIV. OF OIL, GAS & MINING

0005

# Geneva Rock Products – Pelican Point Quarry – NOI

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## **R647-4. Large Mining Operations**

### **R647-4-101. Filing Requirements and Review Procedures**

This NOI is submitted to the Utah Division of Oil, Gas and Mining (DOGM) in compliance with part R647-4 of the Utah Minerals Reclamation program by Geneva Rock Products, Inc.

The proposed quarrying operation is located in Utah County, Utah, on a 186.4-acre parcel owned by Geneva Rock Products, Inc. (Geneva) and 586.8 acres of land leased from Utah State Institutional Trust Lands (SITLA). This quarry has been in existence and operated continuously by various operators since 1920. The private and state owned properties are located in Sections 30 and 31, T6S, R1E, and Section 6, T7S, R1E, Salt Lake Base & Meridian.

### **R647-4-102. Duration of the Notice of Intention**

It is understood that, when approved, this NOI, including any subsequently approved amendments or revisions, remains in effect for the life of the mine. However, Geneva acknowledges that the Division of Oil, Gas, and Mining (DOGM) may review the permit and require updated information and modifications when necessary.

### **R647-4-103. Notice of Intention to Begin Large Mining Operations**

Geneva's NOI addresses the requirement of the rules listed in this section as follows:

- 104. Operator(s), Surface and Mineral Owner(s)
- 105. Maps, Drawings, and Photographs
- 106. Operation Plan
- 108. Hole plugging Requirements
- 109. Impact Assessment
- 110. Reclamation Plan
- 112. Variance
- 113. Surety

## R647-4-104. Operator, Surface and Mineral Owners

1. Mine Name: Pelican Point Quarry
2. Operator: Geneva Rock Products, Inc.  
1565 West 400 North  
Orem, Utah 84057  
  
Phone: 801-765-7800  
Fax: 801-765-7830  
Email: <http://www.genevarock.com/>  
  
Type of Business: Corporation  
Utah Business Entity No.: 570716-0412  
Local Business License No.: 2009-74  
Issued by: Utah County  
  
Registered Utah Agent: Al Schellenberg  
1565 West 400 North  
Orem, UT 84057  
Phone: 801-765-7800  
Fax: 801-765-7830  
Email: [aschellenberg@genevarock.com](mailto:aschellenberg@genevarock.com)
3. Permanent Address: Geneva Rock Products, Inc.  
1565 West 400 North  
Orem, UT 84057  
Phone: 801-765-7800  
Fax: 801-765-7830  
Email: <http://www.genevarock.com/>
4. Contact Person for Permitting, Surety, Notices:  
Mike Edwards  
Geneva Rock Products, Inc.  
P.O. Box 538  
Orem, Utah 84059  
Phone: 801-281-7890  
Fax: 801-641-2117  
Email: [medwards@genevarock.com](mailto:medwards@genevarock.com)

5. Location of Operation: Portions of S.31 T6S, R1E, SLBM

6. Ownership of Land Surface: Geneva Rock Products, Inc.  
1565 West 400 North  
Orem, UT 84057

7. Owners of Record of Mineral to be Mined:

Geneva Rock Products  
1565 West 400 North  
Orem, Utah 84057

8. BLM Lease or Project File Numbers:

None

9. Adjacent Land Owners: Calcite Exploration, LLC  
P.O. Box 37  
Lehi, Utah 84043

Ireco Incorporated  
2650 Decker Lake Blvd. Ste. 300  
Salt Lake City, Utah 84119

Pauline G. Pugh  
145 E. 500 N.  
Lehi, Utah 84043-1607

State of Utah  
Trust Lands Administration  
675 E. 500 S. Suite 500  
Salt Lake City, Utah 84102-2818

10. Have the land, mineral, and adjacent owners been notified in writing?

No.

11. Does Permittee/Operator have a legal right to enter and conduct mining operations on the land covered by this notice? Yes.

<b>R647-4-105. Maps, Drawings, and Photographs</b>
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Maps, drawings, and photographs are provided as requested on Form MR-LMO. The base map Checklist is referenced below by letters and parentheses (a,b,c,d,or e) that represents which of the bullet items is addressed on each map.

### **105.1.Base Maps: Figures 1 and 2**

**Figure 1 Base and Mine Location Map** and shows the mine area and surroundings and is printed at a scale of 1"=2000'. It shows streams, springs, water bodies, road, and topography as required in (B). There are no known underground workings on the site.

**Figure 2 ALTA Survey of Property & Adjacent Land Owners** is printed at a scale of 1"=200' and shows the property boundaries, surface ownership of the mine and adjacent lands, and access routes, utilities and and buildings.

### **105.2. Surface facilities maps: Figures 3 and 4**

**Figure 3: Existing Contours Map**, is printed at a scale of 1"=400' and shows existing surface facilities, roads and washes that pass through or near the lands to be affected. There are no test borings, pits, or boreholes.

**Figure 4: Mine Plan Map**, is printed at a scale of 1"=400' and shows drainage control structures, topsoil storage areas. There is no overburden or waste rock, thus no storage areas are shown. No waste water is generated in this mine, therefore no discharge areas are shown. Storm water is initially impounded in a retention pond near the east central side of the quarry, then later against the high wall in the back of the quarry. After the quarry has been sufficiently developed to hold the water against the high wall the retention pond will be used as a reservoir for the wash plant.

### **105.3. Reclamation Treatments: Figure 5**

**Figure 5 is a Reclamation Treatments map.** This map is printed at a scale of 1"=400'. It shows details about reclamation treatment areas, including what disturbance, such as high walls, topsoil stockpiles and roads, will be reclaimed. A border outlining the extent of the area to be reclaimed vs. the affected area is shown. While no topsoil will be spread on the high walls because they are too steep to re-vegetate. The benches will be covered with topsoil and re-seeded.

All high walls will be left at a benched 1H:1V These areas are shown on the map. The unconsolidated top layer of alluvium will be sloped at 2H:1V. All floor slopes will be 3H:1V or less.

### **104.4. Additional Maps:**

**Figure 5 show erosion control details.**

**Figure 6 shows cross-sections of the reclaimed pit.**

**Figure 7 is a Utah Division of Water Rights map showing area water rights.**

**Figure 8 is a soils map printed at a scale of 1"=1,200' showing existing soil types.**

**Figure 9 is a Geology map showing the underlying geology of the mine.**

## **R647-4-106: Operation Plan**

### **106.1. Mineral to be Mined**

The Pelican Point Quarry will produce crushed and/or screened aggregate for construction materials including concrete and asphalt.

### **106.2. Type of operation to be conducted**

Geneva Rock Products, Inc. (Geneva) primarily extracts aggregate rock for use as road base, landscape rock, and other construction products. The projected future use of the aggregate will also include concrete and asphalt production.

### **Mining Operation**

Geneva will remove rock from the active mine area by drilling, blasting, and dozing methods. New disturbance occurs at the top and sides of the hill slope. All haul roads will be confined within the disturbance boundaries .

Rock is removed by drilling and blasting to release a "lift" of rock approximately 50 feet deep and up to two acres in size. Extraction of this loosened rock occurs by sequentially working downward through the exposed rock. When all blasted rock is removed from the first lift, another blast is set to free this lower lift of rock for removal and processing. Rock is removed from the working face or feed zone; with a loader and either placed in dump trucks or transported directly to the processing area where the rock is separated and adjusted to specific sizes for further processing. The facility is a crushing and sizing operation. Sizing for the final product is determined by specifications provided by customers.

### **Crushing Operation**

Once the rock is removed from the working face, the material is brought a short distance to the primary crusher by a front-end-loader or haul truck where it is broken down to 6-8" for initial sizing. The crushed rock is moved by conveyor to a 3,000 to 5,000 CY surge hopper. Aggregate is metered from the surge hopper, by conveyor, to the secondary crushing unit, which may either be a primary horizontal impact crusher, or a roller cone crusher. The secondary crusher crushes the aggregate to 2" minus. Conveyors then direct the aggregate to 3-deck sizing screens to split the aggregate stream into three different product sizes.

Any oversize aggregate not passing one of the three screen sizes is directed by conveyors to a secondary or tertiary crusher, which are either impact or compression type crushers. The aggregate is then directed back up to the 3-deck screens in a closed circuit. The crushing plant is controlled by motor control circuitry located in the control tower manned by the crusher operator.

The finished products come out of the crushing plant and are conveyed or moved by loaders to the aggregate storage piles where they are stored until sold. When an order is placed for a particular size aggregate, it is loaded into trucks for delivery to the customer or transported to either the concrete plant or asphalt plant for further processing. All conveyors are equipped with spray bars that spray water at drop points to control fugitive dust.

## **Blasting Practices**

Blasting will be used in the mining process at the Pellican Point Quarry. Blasting is not conducted by Geneva, but is subcontracted out to a qualified company trained in blasting design and practices. All blasting will be done in accordance with MSHA regulations. Unless needed, no seismic monitoring of blasting will be done at the Pellican Point Quarry.

The mine will conduct blasting up to 50 times per year. Before blasting occurs, the tower sounds a warning siren to alert all personnel of impending blast; at which time all personnel and equipment are removed from quarry area. The siren is then sounded again and the blaster turns on his emergency flashing lights. The blast is then detonated. No one enters the blasting zone until the blaster gives an all-clear whistle.

## **Concurrent Reclamation**

No reclamation will take place within the next 20-year block. Increased production will force utilization of all additional mined-out acres for staging, sorting, or processing. Reclamation will take place once the quarry is mined out. Reclamation is discussed in Section 110 below.

## **106.3. Estimated Acreage**

Approximately 217 acres will be disturbed over the present phase of the mine. This figure includes all access roads, storage piles, processing areas and mine areas. There is presently about 70 acres of disturbed area within the proposed new bonded limits. Up to 21 acres will be disturbed by mining in the next five years and 1.4 acres of access roads located on the north end of the mine. Total disturbance after five years will be approximately 138 acres. The acres to be mined in the next five-year block and over the life of the mine are show in table 1 below.

**Table 1: areas to be affected durin the next 5-years**

Area	Total affected Acreage	Disturbance Within Already affected Lands / Notes	Total Cubidc Yards of Topsoil Salvaged
Existing Mine Disturbance	70	Pre-existing disturbance	0
Areas of new mining disturbance	99	To be disturbed in years 1-5	79860
Overburden and waste dumps	0	All mined materials are processed and sold	0
Ore and product stockpiles	0	25 acres – within existing disturbance	0
Access/haul roads and topsoil stockpiles located outside existing disturbance (40' wide, with fill slope)	2	Access roads will be built as needed within the existing disturbance	1,614
New concreete batch plant and storage yard	46	New plant will be constructed outside of Geneva's previously affected/bonded area	37,106
Tailings Disposal	0	No tailings are created	0
Sediment control ponds	0	Already existing	0
<b>TOTAL 5-year disturbance</b>	<b>217</b>		<b>118,580</b>

A total of 217 acres will be bonded to give ample freeboard to accommodate unexpected future demand for product.

#### **106.4. Nature of material, including waste rock/overburden, and estimated tonnage**

**Ore**



The annual amount of ore generated is greatly dependent on quarterly demand. We project the average annual production for the next five years to average 750,000 tons (395,000 CY) per year.

### Historic Mining

Mining has occurred at the Pelican Point Quarry and on adjacent lands since 1920's. Most of the area was disturbed prior to the Utah Mine Reclamation Act of 1975, Section 40-8 of the Utah Code. These lands are also known as "Pre-law disturbance" and are discernable as the light colored areas on Figure 3, Existing Surface Facilities Map. Because the Pelican Point Quarry has operated on these pre-law disturbance areas since passage of the Act, these areas are included in the bonded area, which is currently just under 70 acres.

The U&I Sugar Company first operated the quarry when it used limestone for a burned lime product to purify sugar. In the 1940s and 1950s, a company called Lakeside Lime also removed lime products from the area. In the 1960's the quarry continued to be used to extract limestone for rock dust. Evidence from previous operations (Pre-Act) can be observed by all the remaining highwalls, roads, and other surface disturbance at the quarry. The Larson Limestone Company (LLC) operated the quarry from 1984 until 2001. Pelican Point Rock Products took over the operations in August 2001. Rockwell Construction Products operated the Pelican Point Quarry since January 2005 until Geneva purchased it in 2006.

### 106.5. Soils

As stated previously, mining has been conducted on this site since the 1920's. Only about a 1,000 cy of top soil has been salvaged to-date. In the future, all suitable soil material will be removed and stored in a stable condition, and used for reclamation of disturbed areas.

Soils map units are shown on **Figure 8, Soils**. Samples of the top 6-inches of soil was collected at Point TP-1, through TP-6 at random locations to represent the diversity of soils located on the mine property. These samples were taken to characterize soils in preparation for future soil salvage. The sample locations are shown on **Figure 8**. Analytical sampling results are shown in **Table 2** below.

**Table 2: Analytical Results of Fall, 2009 Soil Samples, Top Six Inches of Soil\***

Soil Parameter	TP#1	TP#2	TP#3	TP#4	TP#5	TP#6	Units
Texture	Silt Loam	Loam	Loam	Loam	Loam	Loam	Uniform Soil Classification
pH	7.02	6.99	7.05	6.93	7.03	6.92	@25°C, pH

							units
SAR(sodium absorption ratio)	0.54	.26	.63	..46	.66	.61	
Percent Organic Matter	4.72	4.89	2.50	3.48	4.56	4.50	Total Volatile Solids as % of total sample
Nitrate Nitrogen	17.63	3.2	8.09	27.27	32.51	44.21	ppm
Phosphorus (as P)	20.57	17.80	14.81	10.91	11.98	13.90	ppm
Potassium (as K <sub>2</sub> O)	480.00	489.60	195.20	246.4	406.4	441.60	ppm

The texture of all soil samples were consistent from top to bottom.

There are four soil types within the quarry boundary. These are the Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes, Donnardo stony loam, 2 to 8 percent slopes, Donnardo stony loam, 25 to 40 percent slopes, Pits-Dumps complex (USDA NRCS, 2006). These soils are described in **Tables 3 and 4** below. **Figure 7** shows the locations of these soils within the mine area.

**Table 3: Soil Descriptions for Pelican Point Mine**

Soil Type	Brief Map Unit Description	Ecological site	Forage Productivity: high, normal, low years
Amtoft, moist-Rock outcrop complex, 30 to 70% slopes	Ridges & Hills. Parent material is colluviums derived from sedimentary rock and/or residuum weathered from sedimentary rock. Depth to lithic bedrock 10 – 20 inches CaCO <sub>3</sub> max at 80%. Avail. Water cap. very low		800 lb/ac, 600 lb/ac, 300 lb/ac
Donnardo stony loam, 2 to 8% slopes	Alluvial fans. Alluvium derived from quartzite and/or alluvium derived from limestone and sandstone. Depth to lithic bedrock more than 80". CaCO <sub>3</sub> max at 40%. Gypsum content 1% max. Avail. Water Cap. Low.	Upland Stony Loam (Mountain Big Sagebrush)	1500 lb/ac, 900 lb/ac, 500 lb/ac

Soil Type	Brief Map Unit Description	Ecological site	Forage Productivity: high, normal, low years
Donnardo stony loam, 25 to 40% slopes	Alluvial fans. Alluvium derived from quartite and/or alluvium derived from limestone and sandstone. Depth to lithic bedrock more than 80". CaCO3 max at 40%. Gypsum content 1% max. Avail. Water Cap. Low.	Upland Stony Loam (Mountain Big Sagebrush)	1500 lb/ac, 900 lb/ac, 500 lb/ac
Pits-Dumps complex			

**Table 4: Soil physical and chemical characteristics based on NRCS data**

Soil Type	Topsoil depth	Total Depth	CEC (meq /100g)	pH	SAR	CaCO3 %	CaSO4 %	Na Mmhos /cm	Limitations
Amtoft	0-10"	>60"	5-20	7.9-9.0	0	20-40	0	0-4	Cobbles, Bedrock
Donardo 2 to 8%	0-10"	< 60"	5-20	7.9-9.0	0	20-40	0	0-4	Cobbles
Donnardo 25 to 40%	0-10"	>60"	5.0-15	7.4-8.4	0	1-15	0	0-4	cobbles

### 106.6. Plans for protecting and re-depositing soils

It is estimated that 147 acres of mining disturbance will occur in the next five years. At a 6 inch salvage depth, approximately 118,580 cubic yards of topsoil will be salvaged from this area. Depending on the location of excavation each year (i.e. north-facing vs. south-facing slopes), actual soil salvage by year may be more or less than that stated above. All stockpiles will be surrounded by a berm to protect against soil loss.

The batch plant facility area will also be stripped of topsoil as operations develop there. This 46 acre parcel will be stripped of topsoil from west to east. Topsoil will be placed in a stockpile along SR-68 to create a topsoil berm that will also serve as a visual barrier.

Topsoil and vegetation (made up mostly of grasses, with a small amount of Wyoming Big sagebrush) will be removed together with bulldozers, front-end loaders, and articulated trucks. Vegetation at the mine site will add negligible volume to soil stockpiles.

More detail on topsoil stripping and protection is included in Sub-section 109.3 below.

### **106.7 Existing Vegetative communities to establish re-vegetation success**

According to NRCS range data for the Fairfield Nephi Area Soil Survey (NRCS 2007), which includes the Study Area (See **Figure 8**, Soils), vegetation production on the mine area ranges from 800 lb/acre in a unfavorable year. The ecological site designation is Upland Stoney Loam (Mountain Big Sagebrush).

A vegetation study was completed for the quarry site in 1996 using quadrats to estimate vegetation cover and belt transects to estimate shrub density. It covered the same area to be mined in this NOI. The study report is found in **Appendix B**. Potential plant species for the mine are, base on NRCS data, are shown in Table 4 below.

**Table 4: NRCS Potential Plant Species for AmToft and Donnardo Soil Map Units**

<b>Common Name</b>	<b>Scientific Name</b>
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>
Nevada Bluegrass	<i>Poa nevadensis</i>
Indian ricegrass	<i>Achnatherum hymenoides</i>
Bottlebrush squirreltail	<i>Elymus elymoides</i>
Black sage	<i>Artemisia nova</i>
Antelope bitterbrush	<i>Purshia tridentata</i>
Birchleaf mountain mahogany	<i>Cercocarpus montanus</i>
Utah Juniper	<i>Juniperus osteosperma</i>
Single leaf pinion	<i>Pinus monophylla</i>

The 1996 vegetation study indicates lower species diversity than that described in NRCS data, with more weedy species (e.g. cheatgrass) established. Total cover measured in the 1996 study was 56 percent. Of this, grasses made up 85 percent of relative cover, shrubs made up 14

percent of the relative cover, and forbs made up less than one percent of the relative cover. Dominant species were bluebunch wheatgrass (*Pseudoreoegneria spicata*) followed closely by cheatgrass (*bromus tectorum*). Forb species were negligible. The dominant shrub was broom snakeweed (*Gutierrezia sarothrae*), with approximately 3,790 plants per acre. Sagebrush made up less than one percent of the cover. Total woody species density was found to be 3,811.5 pants per acre. The plant community at lower elevations around the quarry was primarily a grass/shrub land of of bluebunch wheatgrass and snakeweed. Isolated stand of pinyon-juniper were found on hillside. Isolated patches of big sagebrush were also noted. Photographs of the area are shown in Appendix A.

## 106.8. Depth to Groundwater, Overburden material, and Geologic Setting

### Groundwater

Only three wells have been drilled within a mile radius of the quarry, one of which is located at the quarry itself. Infromation about these wells is shown in the table below, and their locations are shown on Figure 2, ALTA Survey Map.

**Table 5: Water Rights Within One Mile of the Permit Area**

Water Right Number	Location	Owner	Source	Flow	Depth in feet	Use
57-2973	SE4 NE4 Sec. 31, T6S, R1E	Geneva Rock	Underground water well	1000.0 acre feet	1,200	Dust supression
54-451	SW4 NW4 Sec. 30, T6S, R1E	IRECO	Underground water well	0.007 CFS	487	Use at explosives plant
54-450	NE4 NW4 Sec. 30. T6S, R1E	IRECO	Underground water well	0.1 CFS	336	Use at explosives plant

Ground water has not been encountered during Geneva's operations of the limestone quarry; nor has there been any recorded documentation of ground water from previous mining activities. Additionally, considering the location and depth data to ground water by the drilled

wells shown in the Impact Assessment in Section 109 below, it appears extremely likely that ground water is below the surface elevation of the valley floor: which is a lower elevation than planned mining will take place.

### **Overburden Material**

Other than the top six inches of material set aside for the reclamation purposes as topsoil, all other material is sold as various aggregate products. No overburden, reject materials, or waste material are produced.

### **Geology of the area**

The geology underlying the highwall face and western half of Section 31 is made up of Mississippian Great Blue Limestone, Humbug Formation, and Deseret Limestone. These formations are the source of higher-quality calcium carbonate limestones used historically for sugar refining. Quaternary surficial alluvium and colluvium, formed from alluvial outwash from the Lakeside Mountains, is exposed at the north end of the permit area, at the north end of Section 31. These deposits run northward across Section 30 as the mountains dive below the surface. To the east, alluvial materials are influenced by the Quaternary Lake Bonneville deposits, which continue eastward into Utah Lake.

There is roughly 750 feet of elevational difference between the ridge top to be mined and the base elevation of the mine area on the east where the facilities are located. There are approximately 300 feet of elevational difference between the ridge top and backside of the hill slope on the west side of the mine area. Geneva does not plan to excavate below the 4,600 foot elevation, although the limestone rock extends below this level.

## **106.9. Location and size of ore and waste stockpiles, tailings and treatment ponds, and discharges**

### **Waste/Overburden Stockpiles**

Raw materials consist of rock that has been removed from the hillside. Other than the top six inches of material that is set aside for reclamation purposes as topsoil, all rock material removed from the hillside is used to create aggregate products according to customer specifications. No waste rock is generated.

### **Material Stockpiles**

There are several stockpiles of sorted and sized rock products stored on site. The general, current, and future locations of these stockpiles are shown on **Figure 4**. A list of stockpiles and maximum expected volume of each can be found in **Table 6** below.

**Table 6: Stockpiles and Estimated Max. Volumes for the Pelican Point Mine**

Stockpile Material	Maximum Volume	Stockpile Material	Maximum Volume
Road Base (1" dia.)	100,000T	Slurry Sand (Type 2)	5,000T
Fines (0.25" dia.)	50,000 T	Drain Rock	30,000T
Sub-base (3" dia.)	50,000 T	Basket Rock (8" dia.)	10,000 T
Chip Rock (0.5" dia.)	30,000 T	Concrete Rock	50,000T
Chip Rock (0.38" dia.)	50,000T	Asphalt Rock (0.75" dia.)	50,000T
Slurry Sand (Type 1)	5,000T	Landscape Rock	5,000T
Natural Fines (0.25" dia.)	50,000T	Concrete Sand	30,000T
High Grade	5,000T		

#### Tailings

No Tailings will be produced at this mine.

#### Water Storage/Treatment Ponds

Water for dust suppression, crushing and screening will be provided by a well on the property (water right 57-2973). Water will be stored in a tank on site until ready for use. Water used in the crushing, aggregate processing and on roads will be absorbed into the gravel and sand, leaving no excess water for run-off. However, in the unlikely event that run-off from the crusher/screening area occurs, water will be directed to the storm water retention basin.

Any storm water run-off coming from affected lands will be collected in the storm water retention basin or within the quarry confines, which, at a minimum, will be sized for the 10-year, 6-hour event, and will be located at the eastern low point of the property, just south of the access road. This retention pond is discussed in more detail in 109.4.

#### Discharges

Installation of the batch plant is not anticipated any sooner than 2015. All water used in making concrete is held in the concrete slurry and sold as part of the ready-mix product. All water used for cleaning out cement trucks is recycled.

#### R647-4-107. Operation Practices

As required, the relevant Operation Practices stipulated in R647-4-107 will be followed.

#### **R647-4-108. Hole Plugging Requirements**

There are no plans for future drilling within the permit area for exploration. If drilling for any reason other than blast hole drilling is planned in the area, Geneva will notify DOGM and the following procedures will be employed.

- Drill holes shall be properly plugged as soon as practical and shall not be left unplugged for more than 30 days without approval by DOGM.
- Dry holes and non-artesian holes that do not produce significant amounts of water may be temporarily plugged with a surface cap to enable Geneva to re-enter the hole for the duration of set operations.
- Surface plugging of drill holes outside the mine area shall be accomplished by setting a nonmetallic permaplug at a minimum of five (5) feet below the surface, or returning the cuttings to the hole and tamping the returned cuttings to within five (5) feet of ground level. The hole above the permaplug or cuttings will be filled with a cement plug. If cemented casing is to be left in place, a concrete surface plug may not be required if a permanent cap is secured on top of the casing.
- Drill holes that encounter water, oil, gas or other potential migratory substances and are 2.5 inches or greater in surface diameter will be plugged in the subsurface to prevent the migration of fluid from one stratum to another. If water is encountered, plugging shall be accomplished as outlined below.
- If artesian flow (i.e. water flowing to the surface from the hole) is encountered during or upon cessation of drilling, a cement plug will be placed to prevent water from flowing between geologic formations and at the surface. The cement mix will consist of API Class A or H cement, with additives as needed, and will weigh at least 13.5 lbs./gal. It will be placed under the supervision of a person qualified in proper drill hole cementing or artesian flow.
- Artesian bore holes will be plugged as described prior to removal of drilling equipment from the well site.
- If the surface owner of the land affected desires to convert an artesian drill hole into a producing and/or monitor well, the landowner will provide written notification to DOGM accepting responsibility for the ultimate plugging of the drill hole.
- Holes that encounter significant amounts of non-artesian water shall be plugged by: 1) placing a 50-ft cement plug immediately above and below the aquifer(s) or filling from the bottom up (through the drill casing) with a high grade bentonite/water slurry



mixture. The slurry shall have a Marsh Funnel viscosity of at least 50 seconds per quart prior to the adding of any cuttings.

## **R647-4-109. Impact Statement**

### **109.1. Surface and ground water systems**

#### **Surface Water**

No perennial streams or intermittent waters have been or are expected to be impacted by mining operations at the Pelican Point Quarry. Any precipitation and/or run-off into the quarry is from sheet flow, which enters the quarry from the hillside above, or, if intercepting quarry access roads to the north of the quarry, flows down these roads via ditches and into the quarry. This water comes from three broad and shallow bowls positioned above the quarry. Because these features are so short and have no defined channels, a generalized run-off calculation was developed for the entire area above the active mine, and is summarized below:

Precipitation = 1.2 inches

Design Event = 10-year, 24-hour (NOAA Atlas 14)

Curve Number 89 (Arid to semiarid rangeland: grass, minor low brush, fair condition)

Soils = D

Estimated runoff = 0.42 inches/acre

Drainage area = 50 acres

Total volume of run-off = 1.75 acre feet

At full mine development (217 Acres, no reclamation) total volume of run-off into quarry = 7.6 acre-feet.

Once inside the quarry, water disperses across the flat quarry floor. Areas used for stockpiles, crushers, and processing facilities are graded to be higher than surrounding areas to prevent contamination of storm water within the quarry. In addition, the three flat platforms that make up the quarry floor area (see Figure 4) are bermed to meet MSHA regulations, and thus act as a containment area where runoff remains until it soaks into the ground or evaporates. This approximately 50 acre area, has the capacity to contain roughly 80 acre feet of water and thus is more than adequate to contain all storm water runoff. However, as a final point of catchment there is a storm water retention basin at the lowest point in the quarry next to SR-68 that has a capacity of 6 acre feet.

Surface water flowing off slopes to the north, west and south of the active quarry area drain away from disturbed lands.

Precipitation runoff intercepted by the main quarry access road from Highway 68 is diverted into ditches and is released from the south side of the road approximately every ¼ mile to minimize water volume and velocity. If erosion or sedimentation are noted on lands where turn-outs are located, Geneva commits to using appropriate water and erosion control measures. This includes, berms and rock check dams (see **Figure 5a**). More specific information about surface water protection can be found in the Storm Water Management Plan.

### **Ground water**

No ground water is expected to be encountered during future mining activities.

The major activities on the mine property that could impact groundwater if residues were to reach this resource are: 1) blasting (will occur up to 50 times per year); 2) presence of diesel fuel, lubricants, etc. used in the heavy equipment used at the mine, 2) presence of additives used in the concrete batch plant, and 4) human wastes, which are processed through chemical toilets, which are serviced regularly. In summary:

- Good housekeeping practices and careful operating procedures are used to minimize fuel and lubricant spills. Fuel and lubricants are stored in tanks that have secondary containment that protect against spills.
- Crushing equipment and vehicles are regularly maintained to prevent lubricant leaks and other malfunctions.
- The quantities of blasting materials used create negligible quantities of nitrates that, in the unlikely event that they reached the ground water, would be well below water quality limits.

### **109.2. Wildlife habitat and endangered species**

The project area ranges from 4,600 feet elevation at the east side to 5,390 feet elevation on the west side. The mine area will excavate into a sub-ridge on the east side of Lakeside Mountains, located immediately west of Utah Lake.

Maps in the Utah Conservation Database (UCD), located at <http://dwrcdc.nr.utah.gov/ucdc/>, indicate that the permit area contains year-long habitat for mule deer, but no habitat for elk, moose, or pronghorn.

The UCD website lists eight Threatened or Endangered (T&E) species that are present in Utah County and 19 Species of Special Concern (SPC) that could be found within the boundaries of the Pelican Point USGS quadrangle, which includes the quarry. The T&E species are listed below in Table 7, and the two SPC species that could be found within or adjacent to the permit area based on habitat requirements are listed.

**Table 10: Utah County Federal Threatened and Endangered Species, and Utah Species of Special Concern\***

Common Name	Scientific Name	Status*	Habitat present at Pelican Point
Ute Ladies'-tresses	<i>Spirnathes diluvialis</i>	T	No – too dry
Deseret Milkvetch	<i>Astragalus desereticus</i>	T	No – not located here
Clay Phacelia	<i>Phacelia argillacea</i>	E	No – not located here
Utah Valvata Snail	<i>Valvata Utahensis</i>	E	No – Extirpated
June Sucker	<i>Chasmistes liorus</i>	E	No- aquatic species
Yellow –billed Cuckoo	<i>Coccyzus americanus</i>	C	No-too far north
Brown (Grizzly) Bear	<i>Ursus arctos</i>	T	No – Extirpated
Canada Lynx	<i>Lynx Canadensis</i>	T	No- notgood habitat
Ferruginous Hawk	<i>Buteo regallis</i>	SPC	Yes –suitable habitat exists
American White Pelican	<i>Pelecanus erythrorhynchus</i>	SPC	No – but are found on nearby Pelican Point

\*T = Threatened, E = Endangered, SPC = Species of Concern

The Utah Natural Heritage Program of the Division of Wildlife Resources was contacted for information about these species of particular concern. Their response letter, attached in the correspondence section (**Appendix D**), did not list any known records of these species of concern on or within one mile of the proposed permit area.

Based on the information presented in the database it is possible that the Ferruginous hawk may use cliffs, ridges, and pinyon-juniper areas of the Lakeside Mountains for nesting. The White Pelican is commonly found on nearby Utah Lake, but would tend to stay away from the mine area as it does not contain suitable habitat.

Because the Pelican Point Quarry has been operation since the 1920's and new disturbance will be limited to approximately seven acres per year in the adjoining current disturbance, it is likely that any hawks or pelicans using the area would be accustomed to the mine's noise and effects and would not be affected by future activities.

The site was physically inventoried for Threatened and Endangered (T&E) Species on Oct 29, 2009 by Ron Kass, Ph.D., Botanist and Professional Wetland Scientist and he determined that there were no T&E plant or animal species on the site (see letter in Appendix D).

### 109.3 Existing Soil and Plant Resources

After 5 years of mining, approximately 55,199 CY of soil will be stored from the mining operation for reclamation as shown in **Figure 4**. A total volume of approximately 118,580 CY of soil will be available for reclamation once the mine is fully developed.

All topsoil piles will be a maximum of 10 feet high and have 1.5H:1V slopes and a flat to slightly arched top. A 1-foot high X 3-foot wide berm with interior ditch will be constructed around each topsoil stockpile area using material bucked up from the land surface where the topsoil pile is located. The ditch will catch and retain any soil that sloughs off the stockpile, and the berm will prevent contamination and erosion from storm water.

As many as five topsoil stockpiles will be constructed in the mining area over the life of the mine covering an area of about 11.3 acres. Two of the stockpiles will be located along the eastern boundary on either side of the quarry entrance. The other stockpiles will be located along the western boundary.

Substitute topsoil material may be developed to augment the topsoil resources available. This substitute material would include a mix of natural or crushed fines, small rock, and pit run material; imported manure and/or organic matter (i.e. agricultural field refuse, wood chips, bran or wheat chaff); and fertilizer to enhance fiber breakdown. This material would be stored and spread separately from actual topsoil resources.

The newly stockpiled soil will be seeded in the fall of each year it has been enlarged with a quick-growing cover of grass and legumes in order to minimize erosion. This seed mix, listed in Table 8, will be broadcast at a rate of 14.5 lbs./acre PLS (pure live seed).

**Table 8: Seed Mix for Topsoil Stockpiles**

Seed Species		PLS*
Scientific Name	Common Name	Pounds Per Acre
<i>Elytrigia intermedia</i>	Intermediate Wheatgrass	2.5
<i>Psuedoroegneria spicata</i>	Bluebunch Wheatgrass	2.5
<i>Achantherum hymenoides</i>	Indian Rice Grass	2.00
<i>Elymus elymoides</i>	Bottlebrush Squirreltail	1.50

<i>Poa sandbergii</i>	Sandberg Bluegrass	1.50
<i>Medicago sativa</i>	Alfalfa	0.75
<i>Agropyron cristatum</i>	Crested Wheatgrass	2.5
<i>Hedysarum boreale</i>	Northern sweetvetch	<u>1.25</u>
	<b>Total</b>	<b>14.50</b>
*PLS = pure live seed		

The size of the area stripped in front of the mining and storage areas will be minimized to limit dust generation and the establishment of noxious weeds. At the same time, the stripped area will be large enough to allow equipment to operate on the stripped lands, and contain within the stripped area all fly-rock that could occur from blasting. Please see subsections 106.5 and 106.6 for more information about topsoil.

All areas disturbed by Geneva (the bonded area) will be reclaimed at the end of mining by regarding (ripping compacted surfaces where necessary), topsoiling, and re-seeding as described in Section 110, with the goal of creating a self-renewing, perennial vegetation cover similar to native conditions.

#### **109.4. Slope stability, Erosion Control, Air Quality, Public Health and Safety**

##### **Slope Stability**

The rock at the Pelican Point Quarry is massive limestone/dolomite rock of the Mississippian Great Blue Limestone, Humbug Formation, and Deseret Limestone. During mining, all active high walls will be maintained with a 40- foot high wall, 25 foot bench and a 15 foot batter. Non-active pre-law areas of high wall will be left in their existing condition until Geneva affects them. These areas are generally steeper than 1H:1V. All high walls affected by Geneva will be brought to a 1H:1V overall slope upon reclamation, with 40 foot high walls, 25 foot benches and 15 foot batters.

Geneva inspects all high walls two times per month. A more extensive high wall inspection is conducted yearly with the MSHA inspector. Existing high walls, some of which are steeper than 1H:1V, have been stable for many years.

Please refer to R647-4-110.2, Reclamation Plan – High walls, for further information on slope stability during reclamation.

##### **Erosion Control**

Due to the arid nature of the landscape, very little run-off is expected from overland flow in or near the mine area. If erosion or sedimentation is likely on down-slope, native lands adjacent to the disturbed mine area, rock check dams or berms will be erected at the edge of disturbance to keep sediments from draining onto these areas. If overland flow originating from native lands up-slope of the mine (to the west occurs), this water will either be allowed to flow into and contained in the mine area or be diverted around the affected area by the MSHA-required safety berms constructed along the high wall. Any erosion or sediment produced on mine-affected lands will be contained within the quarry.

The quarry floor will eventually have a one percent slope to the west (toward the quarry face). This negative slope will cause all storm water entering the quarry to remain there until evaporated or absorbed into the ground. Until the quarry face gets fully developed, a sediment pond sized for the 10-year, 6-hour event (1.25 inches) will be constructed to catch storm water and/or mining-related sediments generated of mining activity. All water that collects in the quarry at the current phase will be held in this pond, constructed at the eastern perimeter of mine disturbance. The pond is designed to hold approximately 100 % of this event, and will initially be constructed to hold 6 acre feet. This pond will be approximately 1 acres in surface area, with an average depth of 6 feet.

Erosion of dirt and dust from on roads will be controlled by graveling the road, and grading it to have sufficient crown and drainage ditches to the side so that water does not pond. Sufficient turn-outs from road ditches will be provided to allow water collecting on the road to be released to native lands in a non-erosive manner. Erosion protection for soil stockpiles is addressed under **Soils**, above.

Erosion will be minimized on reclaimed lands by conducting reclamation activities on the contour, with the use of benches and berms on highwalls, and by seeding at the first appropriate time after topsoil spreading.

### **Air Quality**

Geneva has an Air Quality permit through the State of Utah, Department of Environmental Quality, Division of Air Quality (DAQ). This permit is described as follows: DAQP-005-06; DAQ ID 10843; Site ID-AFS 4900101; SIC Code 1442; Regulated as NSPS and Potential PM10 SIP Source.

### **Public Health and Safety**

Geneva Rock Products will minimize the hazards for public safety and welfare during operations. These measures include:

- No mining shafts or tunnels exist on the site. All buildings, silos, conveyors, and other facilities and equipment are signed to discourage unauthorized or accidental entry in accordance with MSHA regulations.

- A gate at the single access road on the northeast side of the quarry will be locked when the site is not operating. The north, south and east sides of the permit area are fenced to prevent unauthorized entry into the permit area during both operating and non-operating hours. The west side is fenced beyond (west of) the top of the ridge line to which the mining is extending.
- Trash, scrap metal and wood, and extraneous debris is disposed of in marked containers that are picked up monthly and disposed of at the Linden transfer facility.
- Although none are planned, any exploratory or other drill holes will be plugged and/or capping of as set forth in Rule R647-4-108.
- Appropriate warning signs will be located at public access points, and every 300 feet along the east boundary.
- All deleterious or potentially deleterious material, such as fuel tanks and supplies of lubricants and oils, are kept in one bermed storage area to minimize and control adverse environmental effects.
- Used lubricating and hydraulic oils are collected in designated tanks and drums and Held for collection by used oil distributors who process it into burner fuels. Or they are burned to produce building heat for the maintenance and storage building. These waste products are stored in above-ground steel containers located with the building. This heater is included in Division of Air quality Permit DAQP-005-06.

## **R647-4-110. Reclamation Plan**

### **110.1. Current Land Use and Post-Mining Land Use**

Current land use of the property at and near the Pelican Point Quarry includes mining of limestone and rock products. Historical use of the property includes mining, wildlife habitat, and limited grazing of domestic livestock. The SITLA property adjacent to Geneva's property is for the most part, undisturbed and used for wildlife habitat, limited livestock grazing, and dispersed recreation.

The post-mining land use will remain consistent with historical use – wildlife habitat with limited grazing by domestic livestock. The operator will reclaim the mine site area to a condition that is capable of supporting this land use. All buildings will be removed, all roads will be reclaimed except for a two-track road to access and monitor the high wall, quarry floor, and process area during reclamation.

Although this plan addresses mining activities for the next five years, mining is probable for the next 50 years or more. Buildings and mine infrastructure will remain past the five-year period until all future mining is completed. However, the current bond amount reflects sufficient

funds to have all structures dismantled and removed along with regarding and reseeding the entire potential disturbed area. If an agency or landowner later requests some of the structures and roads to remain after reclamation of the remainder of the mines, an amendment to the NOI and a change to the post-mining land use will be provided to DOGM for approval.

## **110.2. Reclamation of Roads, High walls, Slopes, Leach Pads, Dumps, Etc.**

### **Roads**

Upon completion of mining, the main access road providing general access to the quarry will be graded back to a two-track road, and drill seeded as described in Reclamation of benches and quarry floor below. All other roads will be graded to the final contours shown on Figure 5 and ripped to relieve compaction, covered with topsoil and drill seeded.

### **Highwalls**

As mining progresses westward, sidewalls will be graded to an overall slope of 1H:1V to reach their final configuration, with 40 foot high walls laid back 15 feet, and 25-foot wide benches in between. All high walls will also be left at this configuration. If mining ceases before the full extent of the quarry is developed, all exposed working faces will be reclaimed to the 40/15/25 configuration noted above. Pre-law highwalls (see Figure 1) not disturbed by Geneva would not be re-worked.

No significant areas are available for concurrent reclamation.

### **Slopes & Quarry Floor**

Bench surfaces, which become fractured due to blasting and ripping during mining, will create a somewhat friable, rough surface that will hold topsoil and seeds in place. Benches will be 25 feet wide. Highwall berms will be left along those portions of the highwall and sidewall rim that are over five feet high .

Once mining is completed on the quarry floor, any remnants of material stockpiles will be graded across the quarry floor as described in "Disposition of any stockpiles remaining", above. The quarry floor will be graded as necessary using self-loading scrapers and a road grader to create a slightly rolling surface (bond calculations assume an average of six inches of material moved per acre). The floor will then be ripped to a depth of 18" to relieve compaction and encourage root penetration prior to topsoiling. Ripping the quarry floor will create a rough surface to lay topsoil upon. This will help prevent soil erosion and will aid in re-vegetation efforts by creating small depressions to catch and hold rain and snowmelt and provide wind protection for seeds.



Topsoiling and seeding of benches and the quarry floor is discussed under 110.5 below.

#### **Impoundments, Pits and Ponds to be Left**

The quarry will not be backfilled. The quarry will be reclaimed with 1H:1V high walls and the floor will be reclaimed with a negative 1 percent slope to contain water against the high wall where water will infiltrate into the bedrock and/or evaporate. No impoundments or ponds will be left that require maintenance or monitoring.

The storm water retention basin at the east perimeter of the mining area built to collect runoff from the stockpile and processing area will be backfilled and graded to blend with surroundings. This work will be the last area reclaimed to minimize the chance for off-site sediment. The area will be prepared and seeded as part of the quarry floor as noted above.

#### **Drainages**

No drainages will be constructed. Water coming off the high wall will be contained against the base of the high wall in sump areas, and will infiltrate or evaporate, rather than run-off.

#### **Dumps, Shafts, Adits and Leach Pads**

No waste material will be generated, therefore no reclamation of dumps will need to be completed.

There are no shafts, adits or leach pads on the property and none will be constructed.

#### **Drill Holes**

If drilling occurs, holes will be properly plugged and sealed as required in Section R647-4-108.

#### **110.3. Surface Facilities to be left**

No structures will be left. All facilities will be reclaimed. Approximately 1.6 acres of two-track roads will be maintained in reclamation to allow access and monitoring of the reclaimed mine.

A list of structures to be reclaimed is included in the Demolition section of the Surety Calculations located in Appendix F.

All facilities will be demolished after salvaging metals and removing insulation, tile, etc. Concrete will be broken up and buried on site. Other materials will be hauled to a licensed landfill and disposed.

#### **110.4. Treatment, location, and Disposition of Deleterious Material**

Potentially hazardous insulation, tile, and non-salvageable debris from demolition will be removed to a licensed landfill. All tanks will either be removed to a licensed landfill upon reclamation or sold. The surety calculations contained in Section 113 assume these items are disposed of at the Lindon Transfer Facility located in Utah County

All conveyors, crushers, screens, concrete plant, asphalt plant and other equipment used for mining and processing of aggregate will be removed upon reclamation or sold. The surety calculations contained in Section 113 assume these items are disposed of at the MCR Recycling in Orem, Utah.

#### **110.5. Re-vegetation Planting Program and Topsoil Re-distribution**

After final shaping and grading of the quarry floor, concrete batch plant area, slopes, and roads within the disturbed area, surfaces will be ripped and/or scarified on the contour to relieve compaction.

##### **Soil Material Replacement**

Topsoil and topsoil substitute material (described under Sub-section 109.3) will be spread on the quarry floor and plant areas using self loading scrapers to place soil, and a grader to spread soil. Topsoil will be spread to a depth of six inches. Marked lath will be used to guide dozer operators to the correct topsoil depth. Topsoil will be placed 6" deep on high wall benches where possible. The steep slopes between the benches will not be covered with topsoil or reseeded.

##### **Seed Bed Preparation**

Prior to spreading any topsoil or topdressing, stockpiles will be tested for organic matter, Nitrogen, Phosphorus, and Potassium. If these levels are low, composted manure will be applied to the topsoil or topsoil substitute after it is spread.

Topsoil will be laid down with a scraper, and if needed, composted manure at 10 ton/acre will be spread. All surfaces will be scarified along the contour with a road grader to assure mixing of the soil and manure to create consistent-textured soil and a roughened surface that will hold the seed and moisture for best germination.

## Seed Mixture

Table 10 below provides the seed mixture that will be used in reclamation on all bonded, disturbed areas at Pelican Point Quarry that are 3:1 or flatter, including highwall benches. Drill and broadcast seeding rates would be the same.

**Table 10: Reclamation Seed Mix for the Pelican Point Quarry**

Common Name	Scientific Name	PLS Pounds/Acre
'Hycrest' Crested Wheatgrass	<i>Agropyron cristatum</i> 'Hycrest'	0.4
Intermediate wheatgrass	<i>Agropyron intermedium</i>	1.5
Western Wheatgrass	<i>Agropyron intermedium</i>	1.5
Indian ricegrass	<i>Oryzopsis hymneoides</i>	1.2
Ladac Alfalfa	<i>Medicago sativa</i>	0.8
Yellow sweetclover	<i>Melilotus officinalis</i>	0.4
Palmer penstemon	<i>penstemon palmeri</i>	0.4
Small burnet	<i>Sanguisorba minor</i>	0.8
Mtn Big Sage	<i>Artemesia Tridentata</i> <i>vaseyana</i>	0.1
Globe mallow	<i>Sphaeralcea coccinea</i>	0.4
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	0.4
Forage kochia	<i>Kochia prostrata</i>	0.4
	<b>Total Rate to be Seeded</b>	<b>8.3</b>

## Seeding Method

All disturbed areas will be seeded using a range-type drill seeder.

## **Fertilization**

Prior to spreading any topsoil or topdressing, stockpiles will be tested for organic matter, Nitrogen, Phosphorus, and Potassium. If these levels are low, 10 tons of composted manure per acre will be applied to the soil or topsoil substitute after it is spread. Soil amendment quantities will be approved by DOGM prior to application.

## **Other Re-vegetation Procedures**

None.

<b>R647-4-112 Variance</b>
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## **Remaining Highwalls**

All areas of high wall developed or affected since Geneva took over Pelican Point quarry in 2006 will be reclaimed to a 45 degree benched slope or less. All other areas of high wall not affected by Geneva may be left at a steeper configuration if at least three yearly MSHA inspections show these areas have been stable (no significant rockfall or sloughing).

### **Topsoil Salvage**

State Mineral Rules state that "Suitable soil materials shall be removed and stored in a stable condition where practical so as to be available for reclamation." A description of existing soil types is included in Sub-section 106.5 and as depicted in Figure 8, soils. This quarry was developed because the mineable bedrock is very close to the land surface. Consequently, very little soil depth or suitable plant growth material is available. Soils will be salvaged on newly disturbed areas to a maximum average depth of six inches across the area proposed for mining for the next five year period (2009-2014).

The area disturbed as of April, 2008 was disturbed by previous mining operations, most of which were conducted before saving and stockpiling topsoil was a common practice, or before current regulations required it (Pre-Act). Therefore, no topsoil stockpiles are available for reclamation on the property. Topsoil salvaged in 2008 and beyond, as well as topsoil substitute material that can be created, such as mixture of fines, pit-run, manure, and agricultural/silva cultural fibers described in Sub-section 109.3 above, would be used selectively for reclamation on those areas of the mine that are most conducive to reclamation. This includes, in order of priority, the quarry floor, access roads above the concrete batch plant area, the batch plant

area itself, slopes 3:1 or flatter that are north or east facing, and highwalls. Roughly 60 percent of the mine would likely be covered with soil or topsoil substitute material. This material would be spread to a depth of six inches. All surfaces, whether topsoiled or not, would be seeded.

#### **R647-4-113 Surety**

The reclamation surety calculations are contained in Appendix F. A summary of the estimated costs of reclamation for phase I is included below.

1. Demolition and removal of structures	\$268,037.00
2. Backfilling, grading, and contouring	\$271,055.00
3. Revegetation (preparation, seeding, mulching)	\$227,500.00
4. Mob/Demob	\$76,659.00
5. Contingency	\$38,330.00
6. Engineering Redesign	\$19,165.00
7. Main office Expense	\$52,128.00
8. Project Management Fee	\$19,165.00
9. Subtotal Indirect Costs	\$205,447.00
10. Escalation	\$22,907.00
11. Reclamation Costs Escalated	\$994,946.00
12. Bond Amount for 217 acre disturbance (rounded to nearest \$1,000)	\$995,000.00

## References

Natural Resources Conservation Service (NRCS 2008) Web Soil Survey: Eastern Box Elder County Area, Utah. Available online at: <http://websoilsurvey.nrcs.usda.gov/> Accessed Oct. 2008.

Utah Conservation Data Center, 2007. Sensitive Species List by County. Available online at: <Http://dwr cds.nr.utah.gov/ucdc/ViewReports/sscounty.htm> Accessed Oct. 2008.

Utah Division of Water Rights, 2007. Water Right Record Information. Available online at: <http://www.waterrights.utah.gov/wrinfo/query.asp> Accessed October 2008

## Appendix A

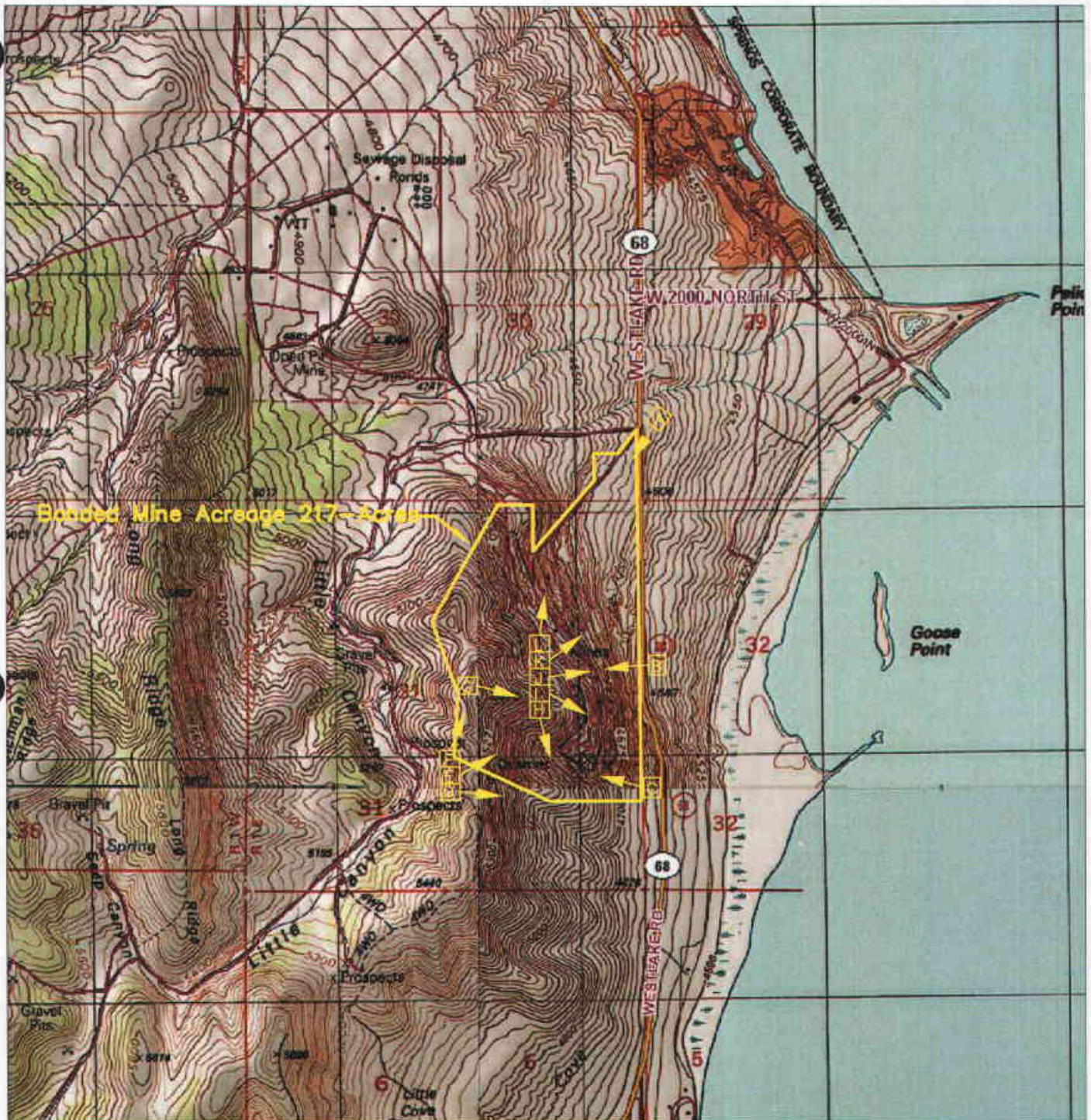
### Photos of Area

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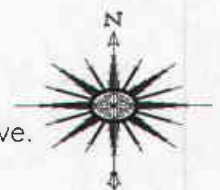


# PELICAN POINT QUARRY PHOTO SCHEMATIC



Please note the following regarding the attached photos:

- All photos taken Oct 27, 2009.
- Photo orientation is noted in parenthesis.
- General photo location and orientation are shown on the schematic above.
- The picture lettering coincides with the schematic lettering above.



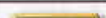
Checked:	PELICAN POINT QUARRY PHOTO SCHEMATIC	Dwg. No.:	No.	Date:	Description:	By:	 Geneva Rock Products, Inc. 1565 West 400 North Orem, Utah 84057
Approved:							
Date:	1" = 2000'						
Dwg. No.:							



Photo A (looking South West)

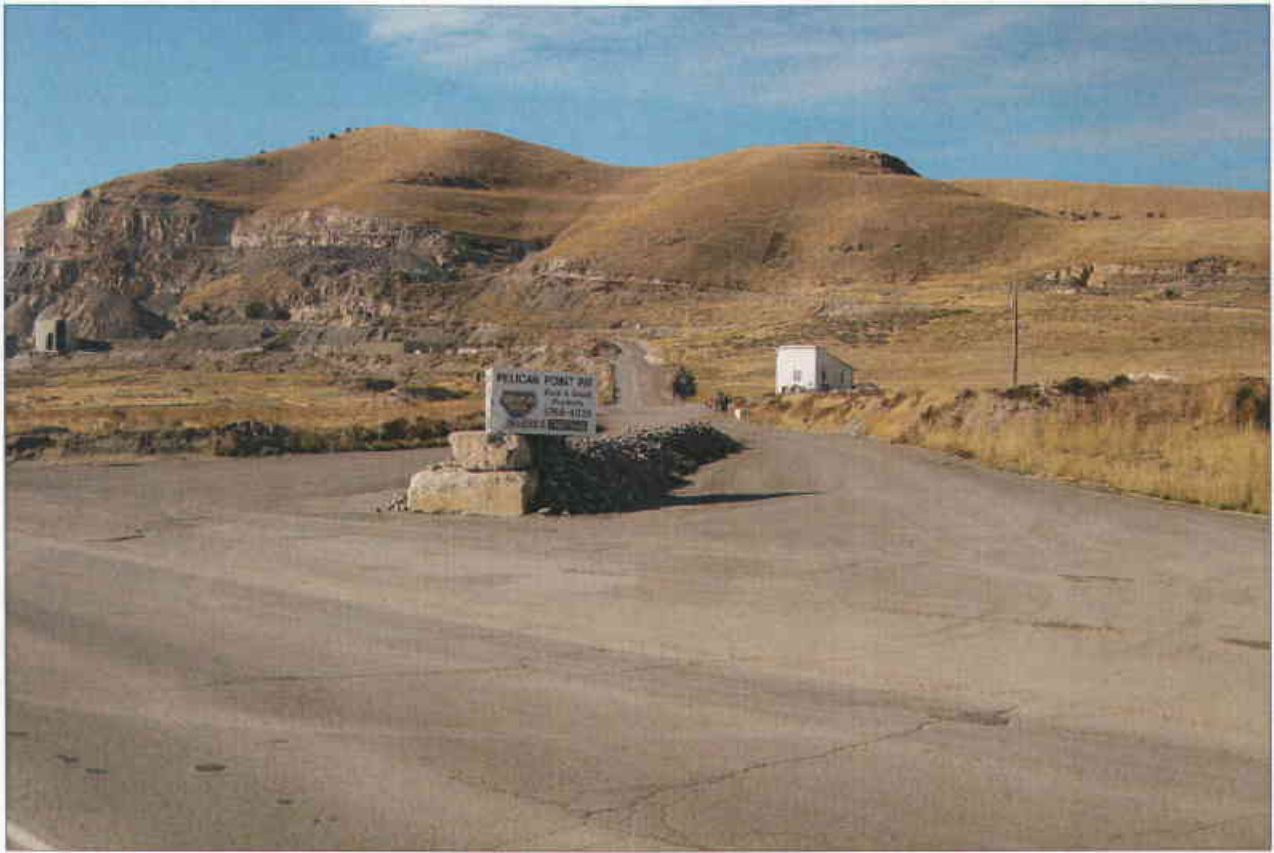


Photo B (looking West)

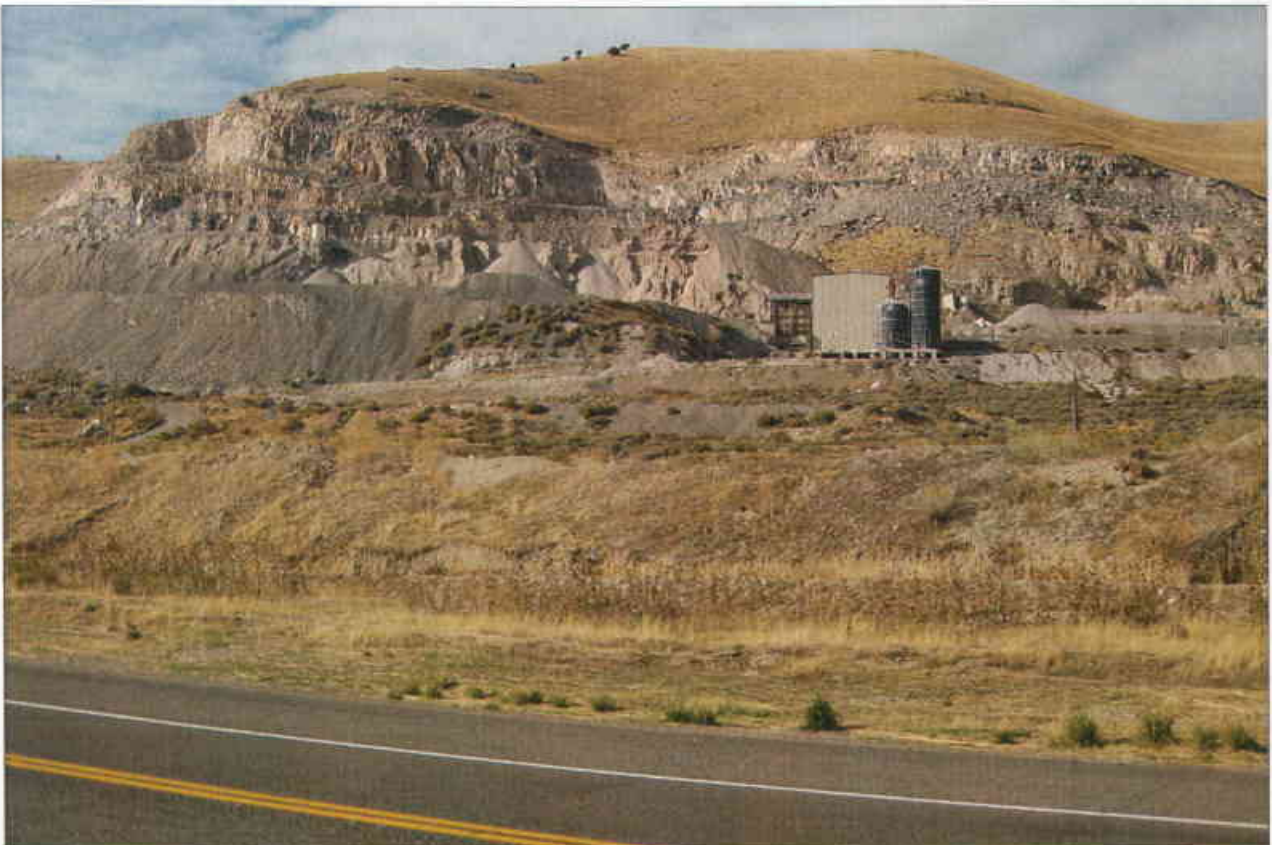


Photo C (looking North West)



Photo D (looking East)





Photo E (looking East)



Photo F (looking North)





Photo G (looking East)



Photo H (looking South)





Photo I (looking Southeast)



Photo J (looking East)





Photo K (looking Northeast)



Photo L (looking North)



## Appendix B

### Vegetation Study

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## Vegetation

### *Introduction*

The Pelican Point Quarry is located on the east slopes of the Lake Mountains, west of Utah Lake. Elevation of the study area ranged from about 4,500 ft to 5,000 ft above sea level.

The plant communities in the area were primarily grass and shrub lands. These grass/shrub communities existed on the lower elevations where the terrain was relatively flat and extended up the slopes. Small, isolated stands of pinyon/juniper communities were noted at mid elevations, while more extensive stands existed at upper elevations of the Lake Mountains range. The plant communities at the quarry site were also grass/shrub communities.

### *Methods*

Methodologies used herein were performed in accordance with the guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGM).

Quantitative and qualitative data were taken on the vegetation of the areas that had not been disturbed by mining activities.



## **Transect and Quadrat Placement**

Transect lines for sampling were placed randomly on the hillside above the quarry. The Vegetation Map [see Dwg. 647-4-(D)] shows the location of the transect lines.

Random/regular placement of sampling quadrats were designed to decrease bias, yet encompass a broad surface area. Once the transect lines were placed, regular points were then marked on them. From these marks, a random number dictated the direction and distance to place the quadrats at right angles from the transect lines.

## **Cover and Composition**

Cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature followed "A Utah Flora" (Welsh et al. 1993).

## Woody Plant Species Density

Density of woody plant species of the area was made using belt transects. These 5 ft by 50 ft belts were placed randomly throughout the study areas. Total number of individuals by species were counted within each of the belt transects. The average number was then calculated followed by the number of individuals per acre.

## Sample Adequacy

Sampling adequacy was attempted using formulas from Snedocor and Cochran (1980), with the goal that 80% of the samples were within 10% of the true mean for the shrub communities of the area. The formula used is given below.

$$n_{min} = \left[ \frac{1.28 (s)}{x (.1)} \right]^2$$

where,

nmin = minimum adequate sample  
s = standard deviation  
x = sample mean  
.1 = confidence interval

## Results

Results from sampling the vegetation indicated that the total living cover of the area was 56.17%. Grasses dominated

the site and comprised 85.35% of the living cover, whereas, shrubs and grasses made up 14.41% and 0.24%, respectively. The dominant plant species by cover were bluebunch wheatgrass (*Elymus spicatus*), followed closely by cheatgrass (*Bromus tectorum*). The dominant shrub by cover and frequency was broom snakeweed (*Gutierrezia sarothrae*). Forbs made only a negligible contribution to the cover in the area (see tables).

Woody species density was also recorded at the site. The dominant shrub by density was again broom snakeweed. It was estimated to have 3811.50 plants per acre (see tables).

### *Discussion*

One could have expected many more shrub and tree species in the area i.e. big sagebrush (*Artemisia tridentata*), pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus oostersperma*). The lack of these species, as well as the abundance of cheatgrass suggest this area is probably greatly influence by wildfires. Evidence that the above species may have once been more dominant is indicated by the presence of isolated patches of communities supporting these species located in close proximity to the quarry and other larger areas around the mountain range. The shallow soils also may greatly influence the establishment of these species the grasses and shallow-rooted shrubs.

Summary of total cover, composition and cover by species, and woody species density of the undisturbed areas of the Pelican Point Quarry.

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	56.17	8.43	30
Litter	17.33	7.27	30
Bareground	8.17	3.53	30
Rock	18.33	6.10	30

COMPOSITION	PERCENT	STANDARD DEVIATION	SAMPLE SIZE
Shrubs	14.41	15.07	30
Forbs	0.24	1.28	30
Grasses	85.35	15.12	30

COVER BY SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
<u>Trees &amp; Shrubs</u>				
<i>Artemisia tridentata</i>	0.17	0.90	30	3.33
<i>Chrysothamnus nauseosus</i>	0.33	1.80	30	3.33
<i>Gutierrezia sarothrae</i>	7.17	8.13	30	60.00
<u>Forbs</u>				
<i>Salsola pestifer</i>	0.17	0.90	30	3.33
<u>Grasses</u>				
<i>Bromus tectorum</i>	21.33	11.83	30	100.00
<i>Elymus spicatus</i>	27.00	15.25	30	96.67

WOODY SPECIES DENSITY	NUMBER/ACRE
<i>Artemisia tridentata</i>	10.89
<i>Chrysothamnus nauseosus</i>	10.89
<i>Gutierrezia sarothrae</i>	<u>3789.72</u>
TOTAL	<u>3811.50</u>

## Appendix C

### Soil Sample Results

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# BRIGHAM YOUNG UNIVERSITY

## Soil and Plant Analysis Laboratory

255 WIDB

Provo, UT 84602

801-422-2147

### Plant and Wildlife Sciences Department

Name Geneva Rock  
Street 750 N. 1500 W.  
Orem Utah 84059  
City State Zip

### SOIL TEST REPORT AND RECOMMENDATIONS

Date: 2-Nov-09  
Telephone: 801-360-1344  
Fax: \_\_\_\_\_

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Matter
Pelican Point Quarry TP1	Turf	7.02	26.16	50.92	22.92	Silt Loam		4.72

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	17.63		X				apply 2.1 lbs of N/1000 sq ft
Phosphorus ppm P	20.57			X			no fertilizer needed
Potassium ppm K	480.00					X	no fertilizer needed
Salinity-ECe dS/m	1.12		X				no salinity problem
Iron ppm Fe	8.50			X			no fertilizer needed
SAR-Sodium Absorption Ratio	0.54	X					no sodium hazard
Calcium-SAR ppm Ca	213.76						
Magnesium SAR ppm Mg	19.84						
Sodium SAR ppm Na	30.72						

Notes:

# BRIGHAM YOUNG UNIVERSITY

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Orem Utah 84059  
City State Zip

### SOIL TEST REPORT AND RECOMMENDATIONS

Date: 2-Nov-09  
Telephone: 801-360-1344  
Fax: \_\_\_\_\_

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Matter
Pelican Point Quarry TP2	Turf	6.99	28.16	47.92	23.92	Loam		4.89

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	3.20	X					apply 2.8 lbs of N/1000 sq ft
Phosphorus ppm P	17.80			X			no fertilizer needed
Potassium ppm K	489.60					X	no fertilizer needed
Salinity-ECe dS/m	1.08		X				no salinity problem
Iron ppm Fe	7.58			X			no fertilizer needed
SAR-Sodium Absorption Ratio	0.26	X					no sodium hazard
Calcium-SAR ppm Ca	213.12						
Magnesium SAR ppm Mg	19.52						
Sodium SAR ppm Na	15.04						

Notes:

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City State Zip

### SOIL TEST REPORT AND RECOMMENDATIONS

Date: 2-Nov-09  
Telephone: 801-360-1344  
Fax: \_\_\_\_\_

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Matter
Pelican Point Quarry TP3	Turf	7.05	35.16	44.28	20.56	Loam		2.50

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	8.09	X					apply 2.8 lbs of N/1000 sq ft
Phosphorus ppm P	14.81		X				apply 1.4 lbs of P <sub>2</sub> O <sub>5</sub> /1000 sq ft
Potassium ppm K	195.20				X		no fertilizer needed
Salinity-ECe dS/m	0.80	X					no salinity problem
Iron ppm Fe	6.48			X			no fertilizer needed
SAR-Sodium Absorption Ratio	0.63	X					no sodium hazard
Calcium-SAR ppm Ca	137.92						
Magnesium SAR ppm Mg	15.68						
Sodium SAR ppm Na	29.44						

Notes:



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Orem Utah 84059  
City State Zip

### SOIL TEST REPORT AND RECOMMENDATIONS

Date: 2-Nov-09  
Telephone: 801-360-1344  
Fax: \_\_\_\_\_

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Matter
Pelican Point Quarry TP4	Turf	6.93	28.16	48.28	23.56	Loam		3.48

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	27.27			X			apply 1.4 lbs of N/1000 sq ft
Phosphorus ppm P	10.91		X				apply 1.4 lbs of P <sub>2</sub> O <sub>5</sub> /1000 sq ft
Potassium ppm K	246.40				X		no fertilizer needed
Salinity-ECe dS/m	0.93	X					no salinity problem
Iron ppm Fe	7.24			X			no fertilizer needed
SAR-Sodium Absorption Ratio	0.46	X					no sodium hazard
Calcium-SAR ppm Ca	169.28						
Magnesium SAR ppm Mg	14.08						
Sodium SAR ppm Na	23.36						

Notes:

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### Plant and Wildlife Sciences Department

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Street 750 N. 1500 W.  
Orem Utah 84059  
City State Zip

### SOIL TEST REPORT AND RECOMMENDATIONS

Date: 2-Nov-09  
Telephone: 801-360-1344  
Fax: \_\_\_\_\_

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Matter
Pelican Point Quarry TP5	Turf	7.03	38.16	41.28	20.56	Loam		4.56

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	32.51				X		apply 0.7 lbs of N/1000 sq ft
Phosphorus ppm P	11.98		X				apply 1.4 lbs of P2O5/1000 sq ft
Potassium ppm K	406.40					X	no fertilizer needed
Salinity-ECe dS/m	1.02		X				no salinity problem
Iron ppm Fe	8.52			X			no fertilizer needed
SAR-Sodium Absorption Ratio	0.66	X					no sodium hazard
Calcium-SAR ppm Ca	167.68						
Magnesium SAR ppm Mg	18.40						
Sodium SAR ppm Na	33.76						

Notes:

# BRIGHAM YOUNG UNIVERSITY

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Orem Utah 84059  
City State Zip

### SOIL TEST REPORT AND RECOMMENDATIONS

Date: 2-Nov-09  
Telephone: 801-360-1344  
Fax: \_\_\_\_\_

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Matter
Pelican Point Quarry TP6	Turf	6.92	28.16	48.64	23.20	Loam		4.50

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	44.21					X	no fertilizer needed
Phosphorus ppm P	13.90		X				apply 1.4 lbs of P2O5/1000 sq ft
Potassium ppm K	441.60					X	no fertilizer needed
Salinity-ECe dS/m	1.35		X				no salinity problem
Iron ppm Fe	8.72			X			no fertilizer needed
SAR-Sodium Absorption Ratio	0.61	X					no sodium hazard
Calcium-SAR ppm Ca	226.56						
Magnesium SAR ppm Mg	26.40						
Sodium SAR ppm Na	36.48						


Notes:

TOPSOIL SAMPLE #1



TOPSOIL SAMPLE #2



J. SUMSION		PELICAN POINT QUARRY TOPSOIL SAMPLE PITS		GENEVA ROCK PRODUCTS, INC. PELICAN POINT QUARRY DOG M M1		 Geneva Rock Products, Inc. 1565 West 400 North Orem, Utah 84057	
Checked:							
Approved:							
Date: OCT. 27, 2009		Dwg. No.:	No.	Date:	Description:	By:	
Dwg. No.:							
TP 1 & 2 SAMPLES							




TOPSOIL SAMPLE #3



TOPSOIL SAMPLE #4



Checked:	PELICAN POINT QUARRY TOPSOIL SAMPLE PITS					GENEVA ROCK PRODUCTS, INC. PELICAN POINT QUARRY DOGM NOI	 Geneva Rock Products, Inc. 1565 West 400 North Orem, Utah 84057
Approved:							
Date: OCT. 27, 2009		TP 3 & 4 SAMPLES	Dwg. No.:				
Dwg. No.:	No.			Date:	Description:	By:	




TOPSOIL SAMPLE #5



TOPSOIL SAMPLE #6



SUBMISSION Checked: Approved: Date: <u>OCT. 27, 2009</u> Dwg. No.:	PELICAN POINT QUARRY TOPSOIL SAMPLE PITS  TP 5 & 6 SAMPLES	Dwg. No.: No. Date: Description: By:	GENEVA ROCK PRODUCTS, INC. PELICAN POINT QUARRY DOGM NO1	 Geneva Rock Products, Inc. 1565 West 400 North Orem, Utah 84057
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## Appendix D

### Correspondence

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Intermountain Ecosystems, LLC.  
270 east 1230 north  
Springville, Ut. 84663  
801-489-4590

November 2009

Brent Sumsion  
Geneva Rock Products, Inc.  
730 North 1500 West  
Orem, Utah 84059

**RE: Pelican Point Quarry, Utah –Wetland & T&E Inventory**

Dear Brent:

On 19 October, I inventoried the proposed Pelican Point Quarry and access road for the occurrence of Jurisdictional Wetlands administered under the Clean Water Act and regulated by the U.S. Army Corps of Engineers (ACOE) Threatened and Endangered Species administered by the U.S. Fish and Wildlife Service.

The parcel is located in Utah County in Township 6 South, Range 1 East, Section 31. The parcel is upland vegetation dominated to big sagebrush and grass. There are no aquatics features or T&E plant or animal species on the property. Therefore, I concluded that a "No Affects" determination be concluded for the project area of 300 acres and would be cleared for future excavation of fill.

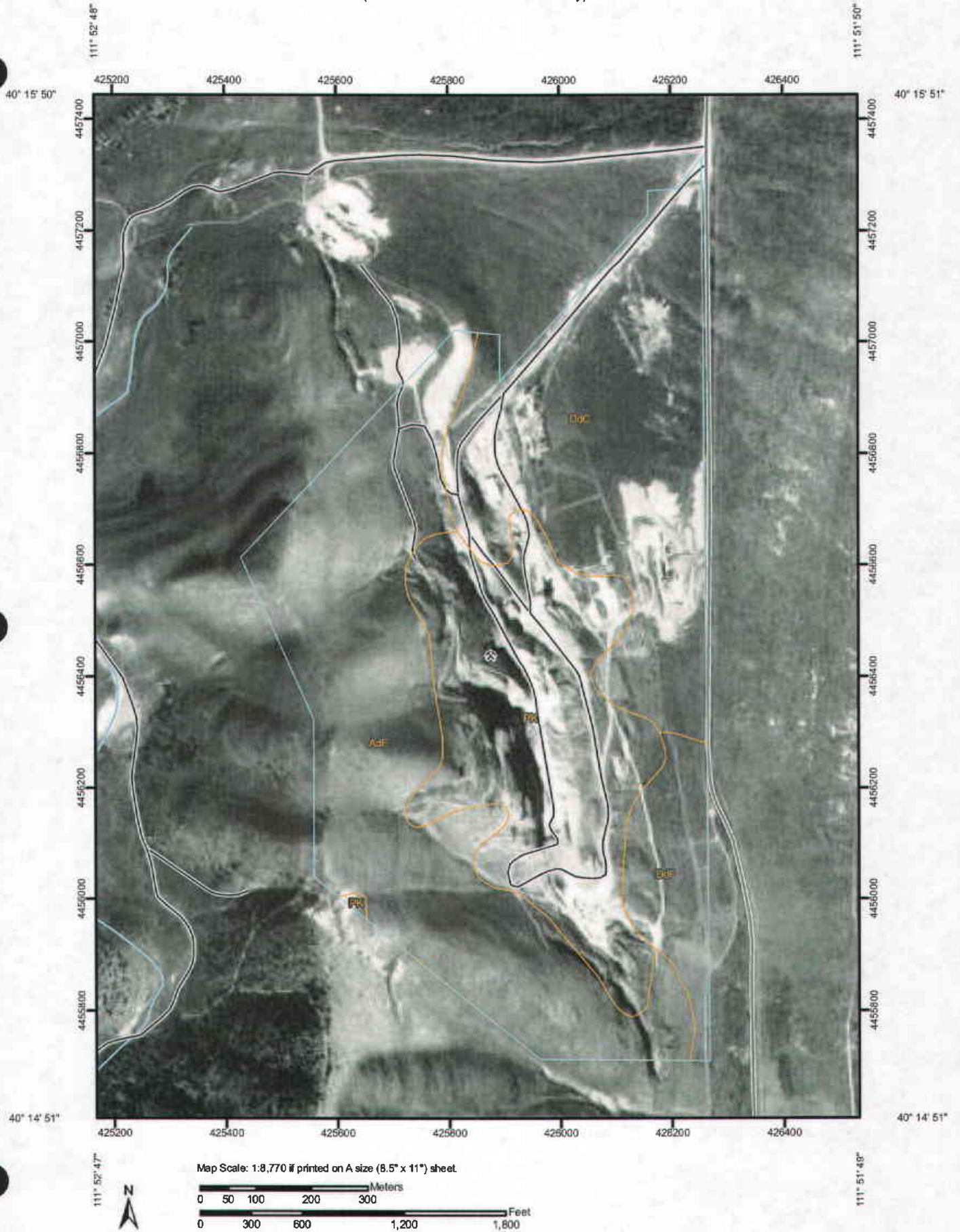
I have both photographs and data forms on file if they are needed for future correspondence with the ACOE. Thanks for the opportunity to work on this project. If there are any questions, please contact me.

Sincerely,

Ronald J. Kass, Ph.D.  
Botanist ,Professional Wetland Scientist (000126)




Soil Map—Fairfield-Nephi Area, Utah  
(Geneva Rock Pelican Point Quarry)



## MAP LEGEND





















### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Units

### Special Point Features




-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

 Very Stony Spot

 Wet Spot

 Other



### Special Line Features

-  Gully
-  Short Steep Slope
-  Other






### Political Features

 Cities

### Water Features

-  Oceans
-  Streams and Canals

### Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

## MAP INFORMATION

Map Scale: 1:8,770 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fairfield-Nephi Area, Utah  
Survey Area Data: Version 5, Sep 2, 2009

Date(s) aerial images were photographed: 10/1/1997; 9/12/1997

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend

Fairfield-Nephi Area, Utah (UT608)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AdF	Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes	81.3	37.0%
DdC	Donnardo stony loam, 2 to 8 percent slopes	66.5	30.2%
DdF	Donnardo stony loam, 25 to 40 percent slopes	14.2	6.5%
PK	Pits-Dumps complex	58.0	26.4%
Totals for Area of Interest		220.0	100.0%



## Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.



Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

## Report—Map Unit Description

### Fairfield-Nephi Area, Utah

#### AdF—Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes

##### Map Unit Setting

*Elevation:* 4,900 to 6,200 feet

*Mean annual precipitation:* 8 to 14 inches

*Mean annual air temperature:* 45 to 51 degrees F

*Frost-free period:* 100 to 140 days

##### Map Unit Composition

*Amtoft and similar soils:* 55 percent



*Rock outcrop: 25 percent*  
*Minor components: 20 percent*

**Description of Amtoft****Setting**

*Landform: Ridges, hills*  
*Landform position (two-dimensional): Summit*  
*Landform position (three-dimensional): Interfluvium, crest, side slope*  
*Down-slope shape: Convex*  
*Across-slope shape: Convex*  
*Parent material: Colluvium derived from sedimentary rock and/or*  
*residuum weathered from sedimentary rock*

**Properties and qualities**

*Slope: 30 to 70 percent*  
*Surface area covered with cobbles, stones or boulders: 13.0 percent*  
*Depth to restrictive feature: 10 to 20 inches to lithic bedrock*  
*Drainage class: Somewhat excessively drained*  
*Capacity of the most limiting layer to transmit water (Ksat): Very low*  
*to moderately high (0.00 to 0.60 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Calcium carbonate, maximum content: 80 percent*  
*Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/*  
*cm)*  
*Available water capacity: Very low (about 2.0 inches)*

**Interpretive groups**

*Land capability (nonirrigated): 7s*

**Typical profile**

*0 to 3 inches: Stony loam*  
*3 to 5 inches: Gravelly loam*  
*5 to 14 inches: Very cobbly loam*  
*14 to 19 inches: Very gravelly fine sandy loam*  
*19 to 23 inches: Unweathered bedrock*

**Description of Rock Outcrop****Setting**

*Landform: Escarpments*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*

**Minor Components****Donnardo**

*Percent of map unit: 5 percent*

**Saxby**

*Percent of map unit: 5 percent*

**Lodar**

*Percent of map unit: 5 percent*



**Amtoft**

*Percent of map unit: 5 percent*

**DdC—Donnardo stony loam, 2 to 8 percent slopes****Map Unit Setting**

*Elevation: 4,500 to 6,200 feet*

*Mean annual precipitation: 12 to 14 inches*

*Mean annual air temperature: 45 to 52 degrees F*

*Frost-free period: 100 to 140 days*

**Map Unit Composition**

*Donnardo and similar soils: 80 percent*

*Minor components: 20 percent*

**Description of Donnardo****Setting**

*Landform: Alluvial fans*

*Down-slope shape: Concave*

*Across-slope shape: Convex*

*Parent material: Alluvium derived from quartzite and/or alluvium  
derived from limestone and sandstone*

**Properties and qualities**

*Slope: 2 to 8 percent*

*Surface area covered with cobbles, stones or boulders: 13.0 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Well drained*

*Capacity of the most limiting layer to transmit water*

*(Ksat): Moderately high to high (0.60 to 2.00 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Calcium carbonate, maximum content: 40 percent*

*Gypsum, maximum content: 1 percent*

*Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)*

*Available water capacity: Low (about 4.7 inches)*

**Interpretive groups**

*Land capability (nonirrigated): 6s*

*Ecological site: Upland Stony Loam (Mountain Big Sagebrush)  
(R028AY334UT)*

*Other vegetative classification: Upland Stony Loam (Mountain Big  
Sagebrush) (028AY334UT)*

**Typical profile**

*0 to 4 inches: Stony loam*

*4 to 10 inches: Very cobbly fine sandy loam*

*10 to 27 inches: Very cobbly loam*

*27 to 39 inches: Very cobbly sandy loam*

*39 to 48 inches: Extremely cobbly fine sandy loam*

*48 to 60 inches: Extremely cobbly fine sandy loam*



**Minor Components****Juab**

*Percent of map unit: 5 percent*

**Borvant**

*Percent of map unit: 5 percent*

**Pharo**

*Percent of map unit: 5 percent*

**Donnardo**

*Percent of map unit: 5 percent*

**DdF—Donnardo stony loam, 25 to 40 percent slopes****Map Unit Setting**

*Elevation: 4,500 to 6,200 feet*

*Mean annual precipitation: 12 to 14 inches*

*Mean annual air temperature: 45 to 52 degrees F*

*Frost-free period: 100 to 140 days*

**Map Unit Composition**

*Donnardo and similar soils: 80 percent*

*Minor components: 20 percent*

**Description of Donnardo****Setting**

*Landform: Alluvial fans*

*Down-slope shape: Concave*

*Across-slope shape: Convex*

*Parent material: Alluvium derived from limestone and sandstone and/  
or alluvium derived from quartzite*

**Properties and qualities**

*Slope: 25 to 40 percent*

*Surface area covered with cobbles, stones or boulders: 13.0 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Well drained*

*Capacity of the most limiting layer to transmit water*

*(Ksat): Moderately high to high (0.60 to 2.00 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Calcium carbonate, maximum content: 40 percent*

*Gypsum, maximum content: 1 percent*

*Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)*

*Available water capacity: Low (about 4.7 inches)*

**Interpretive groups**

*Land capability (nonirrigated): 6s*

*Ecological site: Upland Stony Loam (Mountain Big Sagebrush)  
(R028AY334UT)*





*Other vegetative classification:* Upland Stony Loam (Mountain Big Sagebrush) (028AY334UT)

**Typical profile**

*0 to 4 inches:* Stony loam  
*4 to 10 inches:* Very cobbly fine sandy loam  
*10 to 27 inches:* Very cobbly loam  
*27 to 39 inches:* Very cobbly sandy loam  
*39 to 48 inches:* Extremely cobbly fine sandy loam  
*48 to 60 inches:* Extremely cobbly fine sandy loam

**Minor Components**

**Sandall**

*Percent of map unit:* 5 percent

**Hiko peak**

*Percent of map unit:* 5 percent

**Borvant**

*Percent of map unit:* 5 percent

**Donnardo**

*Percent of map unit:* 5 percent

**PK—Pits-Dumps complex**

**Map Unit Composition**

*Pits:* 65 percent  
*Dumps:* 35 percent

**Data Source Information**

Soil Survey Area: Fairfield-Nephi Area, Utah  
Survey Area Data: Version 5, Sep 2, 2009



## Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

*Sand* as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Silt* as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Clay* as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Saturated hydraulic conductivity (Ksat)* refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.



*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

*Linear extensibility* refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

*Erosion factors* are shown in the table as the K factor ( $K_w$  and  $K_f$ ) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and  $K_{sat}$ . Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor  $K_w$*  indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

*Erosion factor  $K_f$*  indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."



*Wind erodibility index* is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service.  
National soil survey handbook, title 430-VI. (<http://soils.usda.gov>)



## Report—Physical Soil Properties

Physical Soil Properties— Fairfield-Nephi Area, Utah														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
AdF—Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes														
Amtoft	0-3	-41-	-37-	18-22- 25	1.15-1.25	14.11-42.34	0.11-0.14	0.0-2.9	1.0-2.0	.17	.32	1	5	56
	3-5	-41-	-37-	18-22- 25	1.20-1.30	14.11-42.34	0.11-0.14	0.0-2.9	0.0-1.0	.17	.32			
	5-14	-40-	-38-	18-23- 27	1.20-1.30	14.11-42.34	0.08-0.11	0.0-2.9	0.0-1.0	.10	.32			
	14-19	-68-	-14-	15-18- 20	1.35-1.40	14.11-42.34	0.08-0.11	0.0-2.9	0.0-1.0	.10	.28			
	19-23	—	—	0- 0- 0	—	0.00-4.23	—	—	—					
Rock outcrop	—	—	—	—	—	—	—	—	—					
DdC— Donnardo stony loam, 2 to 8 percent slopes														
Donnardo	0-4	-42-	-38-	15-20- 25	1.20-1.30	4.23-42.34	0.11-0.14	0.0-2.9	1.0-3.0	.15	.28	2	5	56
	4-10	-68-	-16-	13-17- 20	1.35-1.50	4.23-42.34	0.07-0.09	0.0-2.9	1.0-3.0	.10	.24			
	10-27	-42-	-38-	15-20- 25	1.20-1.30	4.23-14.11	0.08-0.11	0.0-2.9	0.5-1.0	.10	.28			
	27-39	-65-	-19-	13-17- 20	1.35-1.50	4.23-42.34	0.05-0.07	0.0-2.9	0.5-1.0	.10	.28			
	39-48	-68-	-16-	13-17- 20	1.35-1.50	4.23-42.34	0.04-0.08	0.0-2.9	0.5-1.0	.05	.28			
	48-60	-68-	-16-	13-17- 20	1.35-1.50	4.23-42.34	0.04-0.08	0.0-2.9	0.5-1.0	.05	.28			



Physical Soil Properties— Fairfield-Nephi Area, Utah														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	<i>In</i>	<i>Pct</i>	<i>Pct</i>	<i>Pct</i>	<i>g/cc</i>	<i>micro m/sec</i>	<i>In/In</i>	<i>Pct</i>	<i>Pct</i>					
DdF— Donnardo stony loam, 25 to 40 percent slopes														
Donnardo	0-4	-42-	-38-	15-20- 25	1.20-1.30	4.23-42.34	0.11-0.14	0.0-2.9	1.0-3.0	.15	.28	2	5	56
	4-10	-68-	-16-	13-17- 20	1.35-1.50	4.23-42.34	0.07-0.09	0.0-2.9	1.0-3.0	.10	.24			
	10-27	-42-	-38-	15-20- 25	1.20-1.30	4.23-14.11	0.08-0.11	0.0-2.9	0.5-1.0	.10	.28			
	27-39	-65-	-19-	13-17- 20	1.35-1.50	4.23-42.34	0.05-0.07	0.0-2.9	0.5-1.0	.10	.28			
	39-48	-68-	-16-	13-17- 20	1.35-1.50	4.23-42.34	0.04-0.08	0.0-2.9	0.5-1.0	.05	.28			
	48-60	-68-	-16-	13-17- 20	1.35-1.50	4.23-42.34	0.04-0.08	0.0-2.9	0.5-1.0	.05	.28			
PK—Pits- Dumps complex														
Pits	—	—	—	—	—	—	—	—	—					
Dumps	—	—	—	—	—	—	—	—	—					

## Data Source Information

Soil Survey Area: Fairfield-Nephi Area, Utah

Survey Area Data: Version 5, Sep 2, 2009



## Rangeland Productivity

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

This table shows, for each soil that supports rangeland vegetation, the ecological site and the potential annual production of vegetation in favorable, normal, and unfavorable years. An explanation of the column headings in the table follows.

An *ecological site* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of a site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service (NRCS).

*Total dry-weight production* is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in the "National Range and Pasture Handbook," which is available in local offices of NRCS or on the Internet.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.



## Reference:

United States Department of Agriculture, Natural Resources Conservation Service,  
National range and pasture handbook.

**Report—Rangeland Productivity**

Rangeland Productivity— Fairfield-Nephi Area, Utah				
Map unit symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>
AdF—Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes				
Amtoft	—	800	600	300
Rock outcrop	—	—	—	—
DdC—Donnardo stony loam, 2 to 8 percent slopes				
Donnardo	Upland Stony Loam (mountain Big Sagebrush)	1,500	900	500
DdF—Donnardo stony loam, 25 to 40 percent slopes				
Donnardo	Upland Stony Loam (mountain Big Sagebrush)	1,500	900	500
PK—Pits-Dumps complex				
Pits	—	—	—	—
Dumps	—	—	—	—

**Data Source Information**

Soil Survey Area: Fairfield-Nephi Area, Utah

Survey Area Data: Version 5, Sep 2, 2009





## Chemical Soil Properties

This table shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Cation-exchange capacity* is the total amount of extractable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

*Effective cation-exchange capacity* refers to the sum of extractable cations plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

*Soil reaction* is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Calcium carbonate* equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

*Gypsum* is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

*Salinity* is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

*Sodium adsorption ratio (SAR)* is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced saturated hydraulic conductivity and aeration, and a general degradation of soil structure.



## Report—Chemical Soil Properties

Chemical Soil Properties— Fairfield-Nephi Area, Utah								
Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	<i>In</i>	<i>meq/100g</i>	<i>meq/100g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
AdF—Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes								
Amtoft	0-3	10-20	—	7.9-9.0	20-40	0	0.0-4.0	0
	3-5	5.0-15	—	7.9-9.0	20-40	0	0.0-4.0	0
	5-14	5.0-15	—	7.9-9.0	40-80	0	0.0-4.0	0
	14-19	5.0-15	—	7.9-9.0	40-80	0	0.0-4.0	0
	19-23	—	—	—	—	—	—	—
Rock outcrop	—	—	—	—	—	—	—	—
DdC—Donnardo stony loam, 2 to 8 percent slopes								
Donnardo	0-4	10-20	—	7.4-7.8	1-5	0	0.0-2.0	0
	4-10	5.0-20	—	7.9-8.4	3-15	0	0.0-2.0	0
	10-27	10-15	—	7.9-9.0	15-40	0	0.0-2.0	0
	27-39	4.0-10	—	7.9-9.0	15-40	0-1	0.0-2.0	0
	39-48	5.0-15	—	7.9-9.0	5-15	0-1	0.0-2.0	0
	48-60	5.0-15	—	7.9-9.0	5-15	0-1	0.0-2.0	0



Chemical Soil Properties— Fairfield-Nephi Area, Utah								
Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	<i>In</i>	<i>meq/100g</i>	<i>meq/100g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
DdF—Donnardo stony loam, 25 to 40 percent slopes								
Donnardo	0-4	10-20	—	7.4-7.8	1-5	0	0.0-2.0	0
	4-10	5.0-20	—	7.9-8.4	3-15	0	0.0-2.0	0
	10-27	10-15	—	7.9-9.0	15-40	0	0.0-2.0	0
	27-39	4.0-10	—	7.9-9.0	15-40	0-1	0.0-2.0	0
	39-48	5.0-15	—	7.9-9.0	5-15	0-1	0.0-2.0	0
	48-60	5.0-15	—	7.9-9.0	5-15	0-1	0.0-2.0	0
PK—Pits-Dumps complex								
Pits	—	—	—	—	—	—	—	—
Dumps	—	—	—	—	—	—	—	—

## Data Source Information

Soil Survey Area: Fairfield-Nephi Area, Utah

Survey Area Data: Version 5, Sep 2, 2009



## Appendix E

### Other Permits

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State of Utah

JON M. HUNTSMAN, JR.  
Governor

GARY HERBERT  
Lieutenant Governor

Department of  
Environmental Quality

William J. Sinclair  
Acting Executive Director

DIVISION OF AIR QUALITY  
Cheryl Heying  
Director

DAQE-AN0108430007-09

May 7, 2009

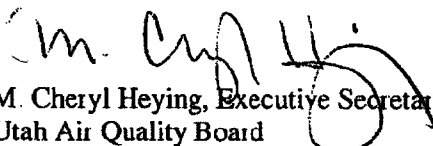
Mike Edwards  
Geneva Rock Products, Inc  
1565 West 400 North  
P.O. Box 538  
Orem, UT 84057

Dear Mr. Edwards:

Re: Approval Order: Modification to Approval Order DAQE-544-98 by Increasing Production and Adding Equipment; Utah County; CDS B; MACT (Part 63), NSPS (Part 60), Nonattainment Area  
Project Number: N010843-0007

The attached document is the Approval Order for the above-referenced project. Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. The project engineer for this action is Mr. Alan Humpherys, who may be reached at (801) 536-4142

Sincerely,

  
M. Cheryl Heying, Executive Secretary  
Utah Air Quality Board

MCH:AH:sa

cc: Utah County Health Department

**STATE OF UTAH**

**Department of Environmental Quality**

**Division of Air Quality**

**APPROVAL ORDER: Modification to Approval Order  
DAQE-544-98 by Increasing Production  
and Adding Equipment**

**Prepared By: Mr. Alan Humpherys, Engineer  
Phone: (801) 536-4142  
Email: [ahumpherys@utah.gov](mailto:ahumpherys@utah.gov)**

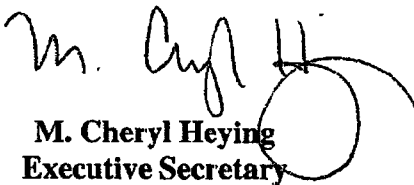
**APPROVAL ORDER NUMBER**

**DAQE-AN0108430007-09**

**Date: May 7, 2009**

**Pelican Point Limestone, Aggregate, & Concrete Facility**

**Source Contact:  
Mr. Mike Edwards,  
Phone: (801) 281-7890**



**M. Cheryl Heying  
Executive Secretary  
Utah Air Quality Board**

## Abstract

Geneva Rock Products, Inc. (Geneva Rock) has requested a modification to their AO for the Pelican Point Limestone, Aggregate, and Concrete Facility. Two aggregate processing plants, an aggregate wash plant, and a concrete batch plant will be added to the facility. Three diesel engines/generators, a hot water heater, and several fuel storage tanks will be added as support equipment to the facility. The production at the facility will be increased from 1,250,000 tons of processed aggregate to 4,000,000 tons of processed aggregate with no more than 600,000 tons of that material being washed in the wash plant per year. The facility will also be allowed to produce up to 200,000 tons of bank-run material and 200,000 cubic yards of concrete per year. Production of the grinding plant will be decreased from 125,000 tons of ground limestone to 70,000 tons of ground limestone per year.

The facility is located in Utah County, which is a non-attainment area for  $PM_{10}$ . Because of the increase in emissions, Geneva Rock triggers the requirement to obtain  $PM_{10}$  emission offset credits on a 1:2 to 1 basis, as per UAC R307-403-5.  $PM_{10}$  emissions offsets of 204.27 tons were satisfied as required. In addition, potential emission rates of  $PM_{10}$  do not exceed the Major Source threshold of 100 tons/year. Because a large portion of this site consists of fugitive emission sources, and this site is designated as an aggregate plant, Geneva Rock's Pelican Point pit shall be considered a Minor source (See R307-101-2 Definition of Major Source).

The potential to emit totals, in tons per year, will change as follows:  $PM_{10} + 142.51$ ,  $NO_x + 26.20$ ,  $SO_2 + 1.51$ ,  $CO + 45.64$ ,  $VOC - 0.05$ ,  $HAPs + 0.064$ .

The changes in emissions will result in the following, in tons per year, potential to emit totals:  $PM_{10} = 149.62$ ,  $NO_x = 41.41$ ,  $SO_2 = 2.87$ ,  $CO = 52.63$ ,  $VOC = 2.10$ ,  $HAPs = 0.064$ .

This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order. This AO is issued to, and applies to the following:

**Name of Permittee:**

Geneva Rock Products, Inc.  
1565 West 400 North  
P.O. Box 538  
Orem, UT 84057

**Permitted Location:**

Geneva Rock Products, Inc.: Pelican Point  
Limestone, Aggregate, & Concrete Facility  
1565 Redwood Road  
Lehi, UT 84043

UTM coordinates: 425,920 m Easting, 4,456,650 m Northing  
SIC code: 3273 (Ready-Mixed Concrete)

### Section I: GENERAL PROVISIONS

- I 1 All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
- I 2 The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
- I 3 Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]



- I.4 All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or Executive Secretary's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of two (2) years. [R307-401]
- I.5 At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
- I.6 The owner/operator shall comply with R307-150 Series Inventories, Testing and Monitoring. [R307-150]
- I.7 The owner/operator shall comply with UAC R307-107 General Requirements: Unavoidable Breakdowns. [R307-107]

## **Section II: SPECIAL PROVISIONS**

### **II.A The approved installations shall consist of the following equipment:**

- II.A.1 **Limestone, Aggregate, and Concrete Facility**
- II.A.2 **Main Aggregate Processing Plant**  
Rated Capacity: 1,500 Tons per hour  
includes: One (1) Primary Screen, One (1) Primary Feed Bin, Three (3) Secondary Screens, Two (2) Tertiary Screens, One (1) Tertiary Crusher, Two (2) Secondary Crushers, One (1) Grizzly Feeder with Hammer, Two (2) Tunnel Feeders (System), Two (2) Aggregate Feeders, One (1) Feeder, Three (3) Aggregate Feeders, One (1) Primary Crusher, One (1) Secondary Feed Bin, Various Main Plant Conveyors
- II.A.3 **One (1) Grizzly Feeder with Hammer**  
Size: 72 Inches Wide
- II.A.4 **One (1) Primary Crusher**  
Rated Capacity: 1,500 tons per hour
- II.A.5 **Two (2) Tunnel Feeders (System)**  
Rated Capacity: 1,500 tons per hour each
- II.A.6 **One (1) Primary Screen**  
Size: 8' x 24'
- II.A.7 **One (1) Primary Feed Bin**

- II.A.8            **Three (3) Aggregate Feeders**  
Size: 72 Inches Wide each
- II.A.9            **Three (3) Secondary Screens**  
Size: 8' x 24' each
- II.A.10           **One (1) Secondary Feed Bin**
- II.A.11           **Two (2) Aggregate Feeders**  
Size: 72 Inches Wide each
- II.A.12           **Two (2) Secondary Crushers**  
Rated Capacity: 1,500 tons per hour each
- II.A.13           **Two (2) Tertiary Screens**  
Size: 8' x 24' each
- II.A.14           **One (1) Feeder**  
Size: 72 Inches Wide
- II.A.15           **One (1) Tertiary Crusher**  
Rated Capacity: 800 tons per hour
- II.A.16           **Various Main Plant Conveyors**
- II.A.17           **Second Aggregate Processing Plant**  
Rated Capacity: 800 Tons per hour  
includes: One (1) Primary Screen, One (1) Grizzly Feeder with Hammer, One (1) Primary  
Crusher, Various Second Plant Conveyors and Stackers
- II.A.18           **One (1) Grizzly Feeder with Hammer**  
Size: 62 Inches Wide
- II.A.19           **One (1) Primary Crusher**  
Rated Capacity: 800 tons per hour
- II.A.20           **One (1) Primary Screen**  
Size: 8' x 20'
- II.A.21           **Various Second Plant Conveyors and Stackers**
- II.A.22           **Third Aggregate Processing Plant**  
Rated Capacity: 600 Tons per hour  
includes: One (1) Primary Screen, Various Third Plant Conveyors, One (1) Grizzly Feeder  
with Hammer, One (1) Feeder, One (1) Primary Crusher, One (1) Feed Bin
- II.A.23           **One (1) Grizzly Feeder with Hammer**  
Size: 62 Inches Wide

- II.A.24      **One (1) Primary Crusher**  
Rated Capacity: 600 tons per hour
- II.A.25      **One (1) Feed Bin**
- II.A.26      **One (1) Feeder**  
Size: 62 Inches Wide
- II.A.27      **One (1) Primary Screen**  
Size: 8' x 20'
- II.A.28      **Various Third Plant Conveyors**
- II.A.29      **Limestone Grinding Mill**  
Rated Capacity: 25 Tons per hour  
includes: Two (2) Cyclones, One (1) Limestone Grinder, Two (2) Powdered Limestone Storage Silos, Various Grinding Mill Conveyors and Feed Bins
- II.A.30      **One (1) Limestone Grinder**  
Rated Capacity: 25 tons per hour  
Control Device: Shaking Baghouse
- II.A.31      **Two (2) Cyclones**  
Controls emissions from the Limestone Grinder
- II.A.32      **Two (2) Powdered Limestone Storage Silos**  
Control Device: Baghouse
- II.A.33      **Various Grinding Mill Conveyors and Feed Bins**
- II.A.34      **Aggregate Wash Plant**  
Rated Capacity: 400 Tons per hour  
includes: One (1) Wet Screen, One (1) Sand Screw, Various Wash Plant Conveyors, One (1) Wash Plant Feeder
- II.A.35      **One (1) Wash Plant Feeder**  
Size: 54 Inches Wide
- II.A.36      **One (1) Wet Screen**  
Size: 8' x 20'
- II.A.37      **One (1) Sand Screw**  
Size: 2' x 54'
- II.A.38      **Various Wash Plant Conveyors**
- II.A.39      **One (1) Truck-Mix Concrete Batch Plant**  
Rated Capacity: 100 cubic yards per hour  
Weigh Hopper Control Device: Baghouse

- II A.40      **Various Cement Storage Silos**  
Control Device: Bin Vents
- II A.41      **Various Fly Ash Storage Silos**  
Control Device: Bin Vents
- II A.42      **Various Aggregate Storage Bins**
- II A.43      **One (1) Hot Water Heater**  
Size: 9.9 MMBTU per hour
- II A.44      **One (1) Crusher/Screen Generator/Engine**  
Power: 900 hp  
Fuel: Diesel Fuel
- II A.45      **One (1) Screen Generator/Engine**  
Power: 174 hp  
Fuel: Diesel Fuel
- II A.46      **One (1) Emergency Generator**  
Power: 1,662 hp  
Fuel: Diesel Fuel
- II A.47      **One (1) 500-Gallon Gasoline Storage Tank**
- II A.48      **One (1) 1,000-Gallon Diesel Storage Tank**
- II A.49      **One (1) 10,000-Gallon Diesel Storage Tank**
- II A.50      **Two (2) 12,000-Gallon Diesel Storage Tanks**
- II A.51      **One (1) 6,000-Gallon Diesel Storage Tank**
- II A.52      **Various Welding Equipment**  
Welding Rods

**II.B      Requirements and Limitations**

**II B.1      The Limestone, Aggregate, and Concrete Facility shall be subject to the following**

- II B.1.a      Geneva Rock shall notify the Executive Secretary in writing when the installation of the two aggregate processing plants, the aggregate wash plant, the concrete batch plant, the three diesel engines/generators, the hot water heater, the fuel storage tanks, and the associated support equipment has been completed and is operational. To ensure proper credit when notifying the Executive Secretary, send your correspondence to the Executive Secretary, attn: Compliance Section.

If the owner/operator has not notified the Executive Secretary in writing within 18 months from the date of this AO on the status of the construction and/or installation, the Executive Secretary shall require documentation of the continuous construction and/or installation of the operation. If a continuous program of construction and/or installation is not proceeding, the Executive Secretary may revoke the AO. [R307-401-18]

II.B.1.b The owner/operator shall not produce more than 200,000 tons of bankrun material per rolling 12-month total. [R307-401]

II.B.1.b.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. All bank-run material shall be weighed and accounted for prior to leaving the Pelican Point Site. Amount of material produced shall be determined by scale house records. The records of production shall be kept on a daily basis. [R307-401]

II.B.1.c Unless otherwise specified in this AO, the owner/operator shall not allow visible emissions from any source on site to exceed 20 percent opacity. [R307-305]

II.B.1.c.1 Unless otherwise specified in this AO, opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. [R307-305]

**II.B.2 All Bulldozing Operations on site shall be subject to the following**

II.B.2.a The hours of operation for all bulldozers at the facility shall not exceed 28,000 hours combined per rolling 12-month period. [R307-401]

II.B.2.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. The hours of operation of each bulldozer shall be added together to determine the total hours. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log. [R307-401]

**II.B.3 All Paved Haul Roads on site shall be subject to the following**

II.B.3.a The owner/operator shall pave the haul road from the site entrance to the grinding mill with concrete or asphalt. [R307-401]

II.B.3.b The owner/operator shall vacuum sweep and flush with water all the paved haul roads on site to maintain opacity limits listed in this AO. If the temperature is below freezing, the owner/operator shall continue to vacuum sweep the road but may stop flushing the paved haul roads with water. If the haul roads are covered with snow or ice, the owner/operator may stop vacuum sweeping the paved haul roads and flushing the paved haul roads with water. [R307-401]

II.B.3.b.1 Records of vacuum sweeping and water application shall be kept for all periods when the plant is in operation. The records shall include the following items:

- A Date and time treatments were made
- B Number of treatments made and quantity of water applied
- C Rainfall amount received, if any
- D Records of temperature, if the temperature is below freezing
- E Records shall note if the paved haul roads are covered with snow or ice. [R307-401]

**II B.4 All Unpaved Haul Roads on site shall be subject to the following**

II B.4 a The owner/operator shall cover all unpaved haul roads from the paved haul road to the concrete batch plant and the aggregate wash plant with road-base material. [R307-401]

II B.4 b The owner/operator shall use water application on all unpaved haul roads and wheeled-vehicle operational areas on site. Water application shall be of sufficient frequency to maintain the opacity limits listed in this AO. If the temperature is below freezing, the owner/operator may stop applying water to the unpaved haul roads and wheeled-vehicle operational areas. [R307-401]

II B.4.b.1 Records of water application shall be kept for all periods when the plant is in operation. The records shall include the following items:

- A Date and time treatments were made
- B Number of treatments made and quantity of water applied
- C Rainfall amount received, if any
- D Records of temperature, if the temperature is below freezing. [R307-401]

**II B.5 All Drilling and Blasting Operations on site shall be subject to the following**

II B.5 a The owner/operator shall install and use a shroud on all aggregate drills when drilling to control fugitive emissions. [R307-401]

II B.5 b The owner/operator shall not blast more than 188 blasts per rolling 12-month period. [R307-401]

II B.5 b.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Number of blasts shall be determined by supervisor monitoring and maintaining of an operations log. [R307-401]

II B.5 c The owner/operator shall not use more than 1,340 tons of explosives per rolling 12-month period. [R307-401]

II B.5 d To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Amount of explosives used shall be determined by purchasing records or maintaining an operations log. [R307-401]

II B.6 **All Haul Roads and Sources of Fugitive Dust on site shall be subject to the following**

II B.6.a The owner/operator shall abide by a fugitive dust control plan acceptable to the Executive Secretary for control of all dust sources associated with the Pelican Point Limestone, Aggregate, and Concrete Batch Plant. The owner/operator shall submit a fugitive dust control plan to the Executive Secretary, attention: Compliance Section, for approval within 30 days of the date of this AO. [R307-309]

II B.6.a.1 The fugitive dust control plan shall, at a minimum, address the following specific control strategies:

**Blasting Operations**

1. Blasting during low wind events
2. Conducting blasting in a manner to prevent over-shoot
3. Maximize hole depth to decrease surface area affected by blasting

**Bulldozing**

1. Minimizing drop distance
2. Minimizing activities during extreme meteorological conditions (i.e. high wind events)
3. Adding moisture to control visible emissions

**Storage Piles**

1. Maintaining moisture in storage piles
2. Minimizing drop distance from conveyors to storage piles
3. Minimizing activities during windy meteorological conditions

**Exposed Areas**

1. Maintaining moisture in exposed areas
2. Other stabilization methods in exposed areas
3. Methods to ensure exposed areas are not re-disturbed by on-site equipment

**Haul Roads**

1. Minimizing the haul road length
2. Minimizing vehicle miles traveled on the haul roads
3. Regularly scheduled maintenance. [R307-401]

II B.6.b The owner/operator shall not allow visible emissions from haul roads and fugitive dust sources to exceed 20 percent opacity on site and 10 percent at the property boundary. [R307-309]

II B.6.b.1 Visible emission determinations for fugitive dust emissions from haul-road traffic and mobile equipment in operational areas shall use procedures similar to Method 9. The normal requirement for observations to be made at 15-second intervals over a six-minute period,



however, shall not apply. Visible emissions shall be measured at the densest point of the plume but at a point not less than 1/2 vehicle length behind the vehicle and not less than 1/2 the height of the vehicle. [R307-309]

II B 6.c The owner/operator shall install water sprays on all conveyor drop points on site. The owner/operator shall apply water from conveyor sprays and water trucks to all storage piles on site to control fugitive emissions. Sprays shall operate as required to ensure the opacity limits listed in this AO are not exceeded. The owner/operator may stop spraying the storage piles with water if the temperature is below freezing. [R307-401]

II B 6.d The owner/operator shall abide by all applicable requirements of R307-309 for Fugitive Emission and Fugitive Dust sources on site. [R307-309]

II B 7 **The Main Aggregate Processing Plant shall be subject to the following**

II B 7.a The main aggregate processing plant shall not produce more than 3,000,000 tons of aggregate and sand combined per rolling 12-month period. [R307-401]

II B 7.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Production shall be determined by belt scale records. The records of production shall be kept on a daily basis. [R307-401]

II B 8 **The Second Aggregate Processing Plant shall be subject to the following**

II B 8.a The second aggregate processing plant shall not produce more than 600,000 tons of aggregate and sand combined per rolling 12-month period. [R307-401]

II B 8.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Production shall be determined by belt scale records. The records of production shall be kept on a daily basis. [R307-401]

II B 9 **The Third Aggregate Processing Plant shall be subject to the following**

II B 9.a The third aggregate processing plant on site shall not produce more than 400,000 tons of aggregate and sand combined per rolling 12-month period. [R307-401]

II B 9.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Production shall be determined by belt scale records. The records of production shall be kept on a daily basis. [R307-401]

**II.B.10      The Limestone Grinding Mill shall be subject to the following**

II.B.10 a      The limestone grinding mill shall not produce more than 70,000 tons of ground limestone per rolling 12-month period. [R307-401]

II.B.10 a.1      To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Production shall be determined by belt scale records. The records of production shall be kept on a daily basis. [R307-401]

II.B.10.b      A manometer or magnehelic pressure gage shall be installed to measure the differential pressure across all of the grinding mill baghouses. Static pressure differential across the fabric filter shall be between one to six inches of water column. The pressure gage shall be located such that an inspector/operator can safely read the indicator at any time. The reading shall be accurate to within plus or minus 1.0 inches water column. The instrument shall be calibrated according to the manufacturer's instructions at least once every year. Continuous or intermittent recording of the reading is not required. [R307-401]

**II.B.11      The Aggregate Wash Plant shall be subject to the following**

II.B.11.a      The aggregate washing and screening plant shall not process more than 600,000 tons of aggregate material per rolling 12-month period. [R307-401]

II.B.11 a.1      To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of processing shall be kept for all periods when the plant is in operation. Amount of material processed shall be determined by belt scale records. The records of processing shall be kept on a daily basis. [R307-401]

II.B.11 b      The owner/operator shall not allow any visible emissions from the wet screening operation or any conveyor on site that processes saturated material. [40 CFR 60 Subpart OOO]

**II.B.12      The Truck-Mix Concrete Batch Plant shall be subject to the following**

II.B.12 a      The truck mix concrete batch plant shall not produce more than 200,000 cubic yards of concrete per rolling 12-month period. [R307-401]

II.B.12 a.1      To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Production shall be determined by scale house records. The records of production shall be kept on a daily basis. [R307-401]

II.B.12.b      A manometer or magnehelic pressure gage shall be installed to measure the differential pressure across the concrete batch plant weigh hopper baghouse. Static pressure differential across the fabric filter shall be between one to six inches of water column. The pressure gage shall be located such that an inspector/operator can safely read the indicator at any time. The

reading shall be accurate to within plus or minus 10 inches water column. The instrument shall be calibrated according to the manufacturer's instructions at least once every year. Continuous or intermittent recording of the reading is not required [R307-401]

II.B.12.c The owner/operator shall install bin vents on all material storage silos associated with the concrete batch plant. Displaced air from the silos shall pass through the bin vents before being vented to the atmosphere [R307-401]

II.B.12.d The owner/operator shall not allow visible emissions from any baghouse or bin vent associated with the concrete batch plant to exceed 10 percent opacity. [R307-401]

II.B.13 **The Hot Water Heater shall be subject to the following**

II.B.13.a The hot water heater shall not exceed 4,380 hours of operation per rolling 12-month period [R307-401]

II.B.13.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log. [R307-401]

II.B.13.b The owner/operator shall use only natural gas or liquefied petroleum gas as fuel in the hot water heater [R307-401]

II.B.13.c The owner/operator shall not allow visible emissions from the hot water heater to exceed 10 percent opacity. [R307-401]

II.B.14 **The 174 hp Screen Generator shall be subject to the following**

II.B.14.a The screen generator shall not exceed 2,400 hours of operation combined per rolling 12-month period. [R307-401]

II.B.14.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log [R307-401]

II.B.15 **The 900 hp Crusher/Screen Generator and the 1,662 Emergency Generator shall be subject to the following**

II.B.15.a The crusher/screen generator and the emergency generator shall not exceed 1,508,460 hp-hr of operation combined per rolling 12-month period [R307-401]

II.B.15.a.1 To determine compliance with the rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. To determine the total hp-hrs for the facility, the owner/operator shall multiply the

horsepower of the engine and the hours of operation for that engine and add the total hp-hrs of all the engines together. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log. [R307-401]

**II.B.16      All Stationary Engines/Generators on site shall be subject to the following**

II.B.16.a      The owner/operator shall not allow visible emissions from any stationary diesel engine on site to exceed 20 percent opacity [R307-305]

II.B.16.b      The owner/operator shall use only #1 diesel fuel in all stationary diesel engines on site. [R307-401]

II.B.16.c      The sulfur content of any fuel oil or diesel burned in any stationary diesel engine on site shall not exceed 0.05 percent by weight. [R307-401]

II.B.16.c.1      The sulfur content shall be determined by ASTM Method D2880-71, D4294-89, or approved equivalent. Certification of fuel oil or diesel fuel shall be either by the owner/operator's own testing or by test reports from the fuel oil or diesel fuel marketer. [R307-203]

II.B.16.d      The owner/operator shall abide by all applicable provisions of 40 CFR 63, MACT Standards Subpart A (General Provisions), 63.1 to 63.16 and Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines), 40 CFR 63.6580 to 63.6675 for all new, reconstructed, or existing (as defined in Subpart ZZZZ) stationary engines on site. [40 CFR 63 Subpart ZZZZ]

II.B.16.e      The owner/operator shall abide by all applicable provisions of 40 CFR 60, NSPS Subpart A (General Provisions), 40 CFR 60.1 to 60.18 and Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines), 40 CFR 60.4200 to 60.4219 for all stationary diesel engines on site as specified in 40 CFR 60.4200(a). [40 CFR 60 Subpart IIII]

**II.B.17      All Crushers on site shall be subject to the following**

II.B.17.a      The owner/operator shall not allow visible emissions from any crusher on site to exceed 15 percent opacity. [40 CFR 60 Subpart OOO]

II.B.17.b      The owner/operator shall install water sprays on all crushers on site to control fugitive emissions. Sprays shall operate as required to ensure the opacity limits listed in this AO are not exceeded. The owner/operator may stop the water sprays if the temperature is below freezing. [R307-401]

**II.B.18      All Screens on site shall be subject to the following**

II.B.18.a      The owner/operator shall not allow visible emissions from any screen on site to exceed 10 percent opacity [40 CFR 60 Subpart OOO]

- II.B.18 b      The owner/operator shall install water sprays on all screens on site to control fugitive emissions. Sprays shall operate as required to ensure the opacity limits listed in this AO are not exceeded. The owner/operator may stop the water sprays if the temperature is below freezing. [R307-401]
  
- II.B.19      **All Conveyors on site shall be subject to the following**
- II.B.19.a      The owner/operator shall not allow visible emissions from any conveyor transfer point on site to exceed 10 percent opacity. [40 CFR 60 Subpart OOO]
- II.B.19.b      The owner/operator shall not allow visible emissions from any conveyor drop point on site to exceed 20 percent opacity. [R307-309]
- II.B.19.c      The owner/operator shall install water sprays on all unenclosed conveyor transfer points on site to control fugitive emissions. Sprays shall operate as required to ensure the opacity limits listed in this AO are not exceeded. The owner/operator may stop the water sprays if the temperature is below freezing. [R307-401]
  
- II.B.20      **All Bin Vents and Baghouses associated with the aggregate processing plants and the limestone grinding mill shall be subject to the following**
- II.B.20.a      The owner/operator shall not allow visible emissions from any baghouse or bin vent associated with the aggregate processing plants and the limestone grinding mill to exceed 7 percent opacity. [40 CFR 60 Subpart OOO]
- II.B.20.b      The owner/operator shall control emissions from the material storage silos on site by passing all displaced air from the storage silos through a baghouse or bin vent before being vented to the atmosphere. [R307-401]
  
- II.B.21      **All Crushers, Grinding Mills, Screens, Conveyors, and Storage Bins on site shall be subject to the following**
- II.B.21.a      Initial visible observations of opacity shall be conducted for all crushers, grinding mills, screens, conveyor transfer points, and storage bin vents/stacks on site. Observations shall meet the opacity limitations listed in this AO. [40 CFR 60 Subpart OOO]
- II.B.21.a.1      Initial visible emission observations of opacity shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Initial visible emission observations shall consist of 30 observations of six minutes each in accordance with 40 CFR 60.11(b). The duration of observations may be reduced to comply with 40 CFR 60.675(c)(3) or 40 CFR 60.675(c)(4). A certified observer must be used for these observations. [40 CFR 60 Subpart OOO]
- II.B.21.b      The owner/operator shall abide by all applicable provisions of 40 CFR 60, NSPS Subpart A (General Provisions), 40 CFR 60.1 to 60.18 and Subpart OOO (Standards of Performance for Nonmetallic Mineral Processing Plants), 40 CFR 60.670 to 60.676 for all crushers, grinding mills, screens, conveyor transfer points, and storage bin vents/stacks on site. [40 CFR 60 Subpart OOO]

### **Section III: APPLICABLE FEDERAL REQUIREMENTS**

In addition to the requirements of this AO, all applicable provisions of the following federal programs have been found to apply to this installation. This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including UAC R307

NSPS (Part 60), A: General Provisions

MACT (Part 63), A: General Provisions

NSPS (Part 60), OOO: Nonmetallic Mineral Processing Plants

NSPS (Part 60), IIII: Stationary Comp/Ignit R I C E

MACT (Part 63), ZZZZ: Recipro. Int Comb Engine (RICE)

### **PERMIT HISTORY**

This AO is based on the following documents:

Is Derived From

Is Derived From

Is Derived From

Is Derived From

Supersedes

Last Information Received dated February 2, 2009

Additional Information dated September 10, 2008

Revised NOI dated June 17, 2008

Initial NOI dated December 28, 2007

DAQE-544-98 dated August 26, 1998

ACRONYMS

The following lists commonly used acronyms and their associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
ATT	Attainment Area
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CO	Carbon monoxide
COM	Continuous opacity monitor
DAQ	Division of Air Quality (typically interchangeable with UDAQ)
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
HAP or HAPs	Hazardous air pollutant(s)
IIA	Intent to Approve
MACT	Maximum Achievable Control Technology
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO <sub>x</sub>	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM <sub>10</sub>	Particulate matter less than 10 microns in size
PM <sub>2.5</sub>	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO <sub>2</sub>	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
UAC	Utah Administrative Code
UDAQ	Utah Division of Air Quality (typically interchangeable with DAQ)
VOC	Volatile organic compounds



## Appendix F

### Surety Calculations

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Bonding Calculations

Direct Costs

Subtotal Demolition and Removal	\$268,037.00
Subtotal Backfilling and Grading	\$271,055.00
Subtotal Revegetation	\$227,500.00
Direct Costs	<u>\$766,592.00</u>

Indirect Costs

Mob/Demob	\$76,659.00	10.0%
Contingency	\$38,330.00	5.0%
Engineering Redesign	\$19,165.00	2.5%
Main Office Expense	\$52,128.00	6.8%
Project Mainagement Fee	\$19,165.00	2.5%
Subtotal Indirect Costs	\$205,447.00	26.8%

Total Cost base on 2009 Costs \$972,039.00

Number of years	5
Escalation factor	0.013
Escalation	\$22,907.00

Reclamation Cost Escalated \$994,946.00

Bond Amount (rounded to nearest \$1,000) \$995,000.00  
2014 Dollars on 95-Acres Bonded Area

Posted Bond

Difference Between Cost Estimate and Bond \$0.00  
Percent Difference

Geneva Rock Products, Inc. - Pelican Point Quarry

### Earthwork Costs

[illegible]

### Earthwork Costs

[illegible]

### Earthwork Costs

[illegible]

### Earthwork Costs

[illegible]

Page 1 of 1



Geneva Rock Products, Inc. - Pelican Point Quarry

## Demolition Costs

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume CF	Weight	Density	Time	Number Loads	Unit	Swell Factor	Quantity	Unit	Cost
	<b>CRUSHER</b>																			
	Conveyors	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	70.00	4.00	4.00							23	ft		25,760.00	cf	7,986
	Stacking Conveyors	Steel Bldg. Large	3 41 16.13 0020	1.31	/CF	120.00	4.00	6.00							5	ft		14,400.00	cf	18,864
	Grizzly Feeder with Primary Crusher	Steel Bldg. Large	4 41 16.13 0020	2.31	/CF	40.00	10.00	12.00							3	ft		14,400.00	cf	33,264
	Primary Screens	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	30.00	10.00	12.00							3	ft		10,800.00	cf	3,348
	Secondary Crushers with Triple Deck Screens	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	12.00	12.00							2	ft		11,520.00	cf	3,571
	Control House/Tower	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	45.00	10.00	12.00							2	ft		10,800.00	cf	3,348
	Tertiary Crushers	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	10.00	12.00							1	ft		4,800.00	cf	1,488
	Tertiary Screens	Steel Bldg. Large	3 41 16.13 0020	1.31	/CF	30.00	10.00	12.00							2	ft		7,200.00	cf	9,432
	Generator - 1000 KW	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	8.00	10.00							2	ft		6,400.00	cf	1,984
	Conex Parts Storage Container	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	8.00	8.00							2	ft		5,120.00	cf	1,587
	Misc. Pipe, legs, and Splitter	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	8.00	8.00							2	ft		5,120.00	cf	1,587
	23 Miles to MCR Recycling, Orem - 20 miles covrd																			
	Total Volume of Materials																	116,320.00	cf	
	Volume of Debris																0.3	34,896.00		
	Weight of Debris												488			lb/cf		8,515	tons	
	No. of Trip 16 Tons																	532	Trip	
	Add 1 Hr per round trip																			
	Hual to Recycling Center 1hr rnd trip	Truck Dump 16 Ton Payload	01 54 33 20 5300	\$ 533.00	Day													-	Day	0
	Truck Driver	Truck driver, Heavy	Trhv	\$ 49.15	HR													-	Hr	0
	<b>Subtotal</b>																			66,500
	<b>Fuel Tank</b>																			
	Removal of Storage Tanks	9000 gal to 12000 gal tank	02 65 10 30 0130	1,500	Ea.										4	Ea		1	Ea	1,500
	Remove Sludge, water remaining products	9000 gal to 12000 gal tank	02 65 10 30 0130	435	Ea.										4	Ea		1	Ea	435
	haul tank 100 miles round trip	9000 gal to 12000 gal tank	02 65 10 30 0130	1,276	Ea.										4	Ea		1	Ea	1,276
	<b>Subtotal</b>																			3,211
	<b>Demolition Cost Structures Disposed on Site</b>																			
	<b>Truck Scales</b>	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	100	10	2								ft		2000	cf	620
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	<b>Subtotal</b>																			620
	<b>Concrete Demolition</b>																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	<b>Subtotal</b>																			
	<b>Total</b>																			90,331

Geneva Rock Products, Inc. - Pelican Point Quarry

## Demolition Costs

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume CF	Weight	Density	Time	Number Loads	Unit	Swell Factor	Quantity	Unit	Cost
	<b>WASH PLANT</b>																			
	Feeder	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	60.00	10.00	12.00								1 ft		7,200.00	cf	2,232
	Wash Screen	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	12.00	12.00								1 ft		5,760.00	cf	1,786
	Twin Sand Screws	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	12.00	12.00								1 ft		5,760.00	cf	1,786
	Conveyors (3)	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	80.00	4.00	4.00								3 ft		3,840.00	cf	1,190
	Clarifier	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	12.00	12.00								1 ft		5,760.00	cf	1,786
	Control House	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	45.00	10.00	10.00								1 ft		4,500.00	cf	1,395
	VSI Impact Crusher	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	10.00	12.00								1 ft		4,800.00	cf	1,488
	Generator - 300 KW	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	20.00	8.00	10.00								1 ft		1,600.00	cf	496
	Conex Parts Storage Container	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	8.00	8.00								1 ft		2,560.00	cf	794
	Misc. Pipe, and Legs	Steel Bldg. Large	02 41 16.13 0020	0.31	/CF	40.00	8.00	8.00								1 ft		2,560.00	cf	794
	23 Miles to MCR Recycling, Orem - 20 miles covrd																			
	Total Volume of Materials																	44,340.00	cf	
	Volume of Debris																0.3	13,302.00		
	Weight of Debris												488			lb/cf		3,246	tons	
	No. of Trip 16 Tons																	203	Trip	
	Add 1 Hr per round trip																			
	Hual to Recycling Center 1hr md trip	Truck Dump 16 Ton Payload	01 54 33 20 5300	\$ 533.00	Day													-	Day	0
	Truck Driver	Truck driver, Heavy	Trhvv	\$ 49.15	HR													-	Hr	0
	<b>Subtotal</b>																			13,700
	<b>Fuel Tank</b>																			
	Removal of Storage Tanks	9000 gal to 12000 gal tank	02 65 10 30 0130	1,500	Ea.											1 Ea		1	Ea	1,500
	Remove Sludge, water remaining products	9000 gal to 12000 gal tank	02 65 10 30 0130	435	Ea.											1 Ea		1	Ea	435
	haul tank 100 miles round trip	9000 gal to 12000 gal tank	02 65 10 30 0130	1,276	Ea.											1 Ea		1	Ea	1,276
	<b>Subtotal</b>																			3,211
	<b>Demolition Cost Structures Disposed on Site</b>																			
	<b>Truck Scales</b>	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	100	10	2								ft		2000	cf	620
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	<b>Subtotal</b>																			620
	<b>Concrete Demolition</b>																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	<b>Subtotal</b>																			
	<b>Total</b>																			17,531

Geneva Rock Products, Inc. - Pelican Point Quarry

## Demolition Costs

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume CF	Weight	Density	Time	Number Loads	Unit	Swell Factor	Quantity	Unit	Cost
	Demolition Cost Structure to be Removed																			
	CONCRETE PLANT																			
	Control House/Switch Van	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	45.00	12.00	10.00							1			5,400	cf	1,674
	Batcher/Bins	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	100.00	12.00	12.00							1			14,400	cf	4,464
	Cement Silo	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	100.00	12.00	12.00							1			14,400	cf	4,464
	Fly Ash Silo	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	50.00	12.00	12.00							1			7,200	cf	2,232
	Feeder	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	90.00	10.00	14.00							1			12,600	cf	3,906
	Conveyors(3)	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	90.00	12.00	12.00							2	Gal		25,920	cf	8,035
	Conex Parts Storage Container	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	30.00	8.00	8.00							2	Gal		3,840	cf	1,190
	Generator	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	80.00	12.00	12.00							1			11,520	cf	3,571
	Water Tank/Heater	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	80.00	12.00	12.00							1			11,520	cf	3,571
	Misc. Pipe, legs, Augers, Ducts	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	40.00	10.00	12.00							1			4,800	cf	1,488
	23 Miles to MCR Recycling, Orem - 20 miles covrd																			
	Total Volume of Materials																	111,600		
	Volume of Debris																	0.3	33,480	
	Weight of Debris												488					lib/cf	8,169	
	No. of Trip 16 Tons																		511	
	Add 1 Hr per round trip																			
	Hual to Recycling Center 1hr md trip		01 54 33 20 5300	\$ 533.00	/day										0			64	Day	34,017
	Truck Driver	Truck Driver, Heavy	Triv	\$ 49.15	Hr													511	Hr	25,095
	Subtotal																			93,707
	Fuel Tank																			
	Removal of Storage Tanks	9000 gal to 12,000gal tank	02 65 10 30 0130	1500	Ea.											1 Ea.		1 Ea.		1,500
	Remove Sludge, Water, Remaining Products	9000 gal to 12,000gal tank	02 65 10 30 0130	435	Ea.											1 Ea.		1 Ea.		435
	Haul Tank 100 miles round trip	9000 gal to 12,000gal tank	02 65 10 30 0130	1276	Ea.											1 Ea.		1 Ea.		1,276
	Subtotal																			3,211
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			96,918

## Demolition Costs

Geneva Rock Products, Inc. - Pelican Point Quarry

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume CF	Weight	Density	Time	Number Loads	Unit	Swell Factor	Quantity	Unit	Cost
	Demolition Cost Structure to be Removed																			
	Limestone Grinding Mill																			
	Limestone Grinder	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	10.00	10.00	10.00							1			1,000	cf	310
	Cyclones	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	20.00	4.00	4.00							2			640	cf	198
	Limestone Storage Silos	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	100.00	12.00	12.00							2			28,800	cf	8,928
	Primary Dust Collector	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	60.00	12.00	12.00							1			8,640	cf	2,678
	Feed Bins	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	90.00	10.00	14.00							1			12,600	cf	3,906
	Conveyors (3)	Steel Bldg. Large	02 41 16 13 0020	0.31	/CF	60.00	4.00	4.00							3			2,880	cf	893
	23 Miles to MCR Recycling, Orem - 20 miles covrd																			
	Total Volume of Materials																	54,560		
	Volume of Debris																0.3	16,368		
	Weight of Debris												488				lb/cf	3,994		
	No. of Trip 16 Tons																	250		
	Add 1 Hr per round trip																			
	Hual to Recycling Center 1hr md trip		01 54 33 20 5300	\$ 533.00	/day										0		hr/trip	-	Day	-
	Truck Driver	Truck Driver, Heavy	Triv	\$ 49.15	Hr													-	Hr	-
	Subtotal																			16,914
	Fuel Tank																			
	Removal of Storage Tanks	9000 gal to 12,000gal tank	02 65 10 30 0130	1500	Ea.										0	Ea.		0	Ea.	-
	Remove Sludge, Water, Remaining Products	9000 gal to 12,000gal tank	02 65 10 30 0130	435	Ea.										0	Ea.		0	Ea.	-
	Haul Tank 100 miles round trip	9000 gal to 12,000gal tank	02 65 10 30 0130	1276	Ea.										0	Ea.		0	Ea.	-
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			16,914

Geneva Rock Products, Inc. - N. Grantsville Quarry

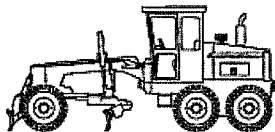
Demolition Costs

Ref.	Description	Materials	Means Reference Number	Unit Cost	/Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	<b>MISC. BUILDINGS</b>																			
	Scale House					40	35	10		1,400	14,000									
	Change Room					12	8	10		96	960									
	Mill House 1					50	49	45		2,450	110,250									
	Mill House 2					34	24	45		816	36,720									
	Crusher East Shop																			
	West Main Shop																			
	Deduct 50% no interior walls																			
	Structure's Demolition Cost	Mixed Materials Bldg. Large	02 41 16.13 0100	\$	0.33	CF				4,762	161,930							161930	CF	\$ 53,437
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck	Truck Dump 16 ton payload	01 54 33.20 5300	\$	533.00	/day									0	day/trp		0 day		\$ -
	Transportation Cost Non Steel Drive																	0 hr		\$ -
	Disposal Cost Non Steel	T. Co. Solid Waste Mgmt. Facility- 20 miles	TCSWMF	\$	23.00	Ton												0 Ton		\$ -
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			\$ 53,437
	<b>Subtotal</b>																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	<b>Subtotal</b>																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition Cost	Concrete Demo1	\$	11.03	CY			2	4,762						ft		353 CY		\$ 3,891
	Concrete's Vol. Demolished																	1.3	459 CY	
	Loading Cost	Front end loader wheel 3 cy	31 23 16 42 1601		1.01	CY													459 CY	\$ 463
	Transportation Cost	12CY (16 ton) Dump! Truck 1/2mi. Md. Tri	31 23 23 20 0320	\$	2.92	CY													459 CY	\$ 1,339
	Disposal Costs	Disposal on site	02 41 16 17 4200	\$	9.00	/CF							0						459 CY	\$ 4,127
	<b>Subtotal</b>																			\$ 9,820
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	<b>Subtotal</b>																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	<b>Subtotal</b>																			
	<b>Total</b>																			\$ 63,257

[illegible]

# EQUIPMENT WATCH

Friday, Apr 3, 2009

**Caterpillar 14H** (discontinued 2007)

Articulated Frame Graders

Size Class:

Net Hp: 200 - 249 HP

Weight:

41,465 lbs.

[Compare Similar Models](#)
[Add To My Fleets](#)
**Configuration for 14H**

Power Mode:	Diesel	Operator Protection:	EROPS
Moldboard Size:	14'	Net Horsepower:	220.0

**Blue Book Rates**Rate Effective Dates: ☐ Always Use Current Rate

	Ownership Costs				Estimated Operating Costs		FHWA Rate
	Monthly	Weekly	Daily	Hourly	Hourly	Hourly	
Published Rates	\$11,140.00	\$3,120.00	\$780.00	\$115.00	\$55.90	\$119.20	
<b>Adjustments</b>							
Region (Utah: 86.5%)	-\$1,503.90	-\$421.20	-\$105.30	-\$15.52			
Model Year (100%)	-	-	-	-			
Ownership (100%)	-	-	-	-			
Operating (100%)	-	-	-	-			
<b>Total:</b>	<b>\$9,636.10</b>	<b>\$2,698.80</b>	<b>\$674.70</b>	<b>\$99.48</b>	<b>\$55.90</b>	<b>\$110.65</b>	

For details, see Rate Element Allocation

**Adjustments**

Default Settings

Model Year:

Region:

User Defined

Ownership:  %

Operating:  %

[Adjust Rates](#)
**Rate Element Allocation**

Element	Percentage	Value
Depreciation (ownership)	33%	\$3,676.20 / mo
Overhaul (ownership)	39%	\$4,344.60 / mo
CFC (ownership)	14%	\$1,559.60 / mo
Indirect (ownership)	14%	\$1,559.60 / mo
Fuel (operating) @ \$3.96	50%	\$27.88 / hr

Revised Date: 2nd Half 2008

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 Email: [customerservice@equipmentwatch.com](mailto:customerservice@equipmentwatch.com)  
 Version: 3.2.12A

# EQUIPMENT WATCH.

Friday, Apr 3, 2009



## Caterpillar 623G

Single Engine Elevating Scrapers

Size Class:

Heaped Capacity - Cubic Yds: 18 &amp; Under 30CY

Weight:

82,530 lbs.

[Compare Similar Models](#)
[Add To My Fleets](#)

## Configuration for 623G

Power Mode: Diesel Scraper Capacity: 18.0 - 23.0 cy  
 Net Horsepower: 365.0 Operator Protection: EROPS

Manufacturer Notes: C-H = Cushion-Hitch

## Blue Book Rates

Rate Effective Dates: ☒ Always Use Current Rate

	Ownership Costs				Estimated Operating Costs		FHWA Rate
	Monthly	Weekly	Daily	Hourly	Hourly	Hourly	Hourly
Published Rates	\$22,775.00	\$6,375.00	\$1,595.00	\$240.00	\$126.05		\$255.45
<b>Adjustments</b>							
Region (Utah: 86.5%)	-\$3,074.62	-\$860.62	-\$215.32	-\$32.40			
Model Year (100%)	-	-	-	-			
Ownership (100%)	-	-	-	-			
Operating (100%)	-	-	-	-			
<b>Total:</b>	<b>\$19,700.38</b>	<b>\$5,514.38</b>	<b>\$1,379.68</b>	<b>\$207.60</b>	<b>\$126.05</b>		<b>\$237.98</b>

For details, see Rate Element Allocation

## Adjustments

Default Settings

Model Year: Please Select

Region: Utah

☐ Canadian Regions
 ☐ Alaskan Regions

User Defined

Ownership: %

Operating: %

[Adjust Rates](#)

## Rate Element Allocation

Element	Percentage	Value
Depreciation (ownership)	29%	\$6,604.75 / mo
Overhaul (ownership)	49%	\$11,159.75 / mo
CFC (ownership)	12%	\$2,733.00 / mo
Indirect (ownership)	10%	\$2,277.50 / mo
Fuel (operating) @ \$3.96	44%	\$54.93 / hr

Revised Date: 2nd Half 2008

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 Version: 3.2.12A





Friday, Apr 3, 2009

**On-Highway Light Duty Trucks**  
 Miscellaneous Models

[Add To My Fleets](#)
**Configuration for On-Highway Light Duty Trucks**

Power Mode:	Diesel	Cab Type:	Conventional
Axle Configuration:	4X2	Ton Rating:	3/4
Horsepower:	160.0		

**Blue Book Rates**

Rate Effective Dates: Always Use Current Rate

	Ownership Costs				Estimated Operating Costs	FHWA Rate
	Monthly	Weekly	Daily	Hourly	Hourly	Hourly
Published Rates	\$755.00	\$210.00	\$53.00	\$8.00	\$10.20	\$14.49
<b>Adjustments</b>						
Region (Utah: 89.8%)	-\$77.01	-\$21.42	-\$5.41	-\$0.82		
Model Year (100%)	-	-	-	-		
Ownership (100%)	-	-	-	-		
Operating (100%)	-	-	-	-		
<b>Total:</b>	<b>\$677.99</b>	<b>\$188.58</b>	<b>\$47.59</b>	<b>\$7.18</b>	<b>\$10.20</b>	<b>\$14.05</b>

For details, see Rate Element Allocation

**Adjustments**

Default Settings

Model Year: Please Select

Region: Utah

Canadian Regions Alaskan Regions

User Defined

Ownership: %

Operating: %

[Adjust Rates](#)
**Rate Element Allocation**

Element	Percentage	Value
Depreciation (ownership)	56%	\$422.80 / mo
Overhaul (ownership)	25%	\$188.75 / mo
CFC (ownership)	9%	\$67.95 / mo
Indirect (ownership)	10%	\$75.50 / mo
Fuel (operating) @ \$3.96	75%	\$7.60 / hr

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Friday, Apr 3, 2009

**On-Highway Water Tankers**  
 Miscellaneous Models

[Add To My Fleets](#)
**Configuration for On-Highway Water Tankers**

Power Mode: Diesel Tank Capacity: 3,500 gal  
 Horsepower: 250.0

Equipment Notes: Rates include pump and rear spray system.

**Blue Book Rates**
Rate Effective Dates: ☒ Always Use Current Rate

	Ownership Costs				Estimated Operating Costs	FHWA Rate
	Monthly	Weekly	Daily	Hourly	Hourly	Hourly
Published Rates	\$2,775.00	\$775.00	\$195.00	\$29.00	\$36.65	\$52.42
<b>Adjustments</b>						
Region (Utah: 89.8%)	-\$283.05	-\$79.05	-\$19.89	-\$2.96		
Model Year (100%)	-	-	-	-		
Ownership (100%)	-	-	-	-		
Operating (100%)						
<b>Total:</b>	<b>\$2,491.95</b>	<b>\$695.95</b>	<b>\$175.11</b>	<b>\$26.04</b>	<b>\$36.65</b>	<b>\$50.81</b>

For details, see Rate Element Allocation

**Adjustments**

Default Settings

Model Year: Please Select

 Region: Utah  
 Canadian Regions Alaskan Regions

User Defined

Ownership: %

Operating: %

[Adjust Rates](#)
**Rate Element Allocation**

Element	Percentage	Value
Depreciation (ownership)	52%	\$1,443.00 / mo
Overhaul (ownership)	24%	\$666.00 / mo
CFC (ownership)	12%	\$333.00 / mo
Indirect (ownership)	12%	\$333.00 / mo
Fuel (operating) @ \$3.96	68%	\$24.75 / hr

Revised Date: 2nd Half 2008

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Project: Pelican Point Quarry  
Date: 11/16/09  
Prepared by: B. Summison

WORKSHEET 12  
PRODUCTIVITY AND HOURS REQUIRED FOR MOTORGRADER USE

Earthmoving Activity:

Scarify Roads, Plant & Stockpile Area

Characterization of Grader Used (type, size capacity, etc.):

Cat 14H 14' Wide Blade Ripper Beam width 8'6" Wide  
Description of Grader Route (push distance/grade, effective blade width, operating speed, etc.):

123 Acres of Area to scarify

Productivity Calculations:

Grading

$$\text{Hourly Production} = \frac{\text{mi/hr}}{\text{average speed}} \times \frac{\text{ft}}{\text{effective blade width}} \times 5,280 \text{ ft/mi} \times 1 \text{ ac/43,560 ft}^2$$
$$\times \frac{\text{efficiency factor}}{\text{efficiency factor}} = \text{ac/hr}$$

$$\text{Hours Required} = \frac{\text{area to be graded}}{\text{area to be graded}} \text{ ac} \div \frac{\text{ac/hr}}{\text{hourly production}} = \text{hr}$$

Scarification

$$\text{Hourly Production} = \frac{4}{\text{average speed}} \text{ mi/hr} \times \frac{0.5}{\text{scarifier width}} \text{ ft} \times 5,280 \text{ ft/mi} \times 1 \text{ ac/43,560 ft}^2$$
$$\times \frac{.75}{\text{efficiency factor}} = \frac{3.1}{\text{ac/hr}} \quad 123 \text{ ac} / 3.1 \text{ ac/hr} = 40 \text{ HR}$$

$$\text{Hours Required} = \frac{\text{area to be scarified}}{\text{area to be scarified}} \text{ ac} \div \frac{\text{ac/hr}}{\text{hourly production}} = \text{hr}$$

Total Hours Required

$$\text{Total Hours} = \frac{\text{grading hours required}}{\text{grading hours required}} + \frac{\text{scarification hours required}}{\text{scarification hours required}} = \text{hr}$$

Data Source(s):

Project: \_\_\_\_\_  
Date: \_\_\_\_\_  
Prepared by: \_\_\_\_\_

WORKSHEET 12  
PRODUCTIVITY AND HOURS REQUIRED FOR MOTORGRADER USE

Earthmoving Activity:

*Knocking Down for Scrapers*

Characterization of Grader Used (type, size capacity, etc.):

*Cat 14 H Grader, Blade length*

Description of Grader Route (push distance, grade, effective blade width, operating speed, etc.):

Productivity Calculations:

Grading

$$\begin{aligned} \text{Hourly Production} &= \frac{3.50}{\text{average speed}} \text{ mi/hr} \times \frac{12.12 @ 30^\circ}{\text{effective blade width}} \text{ ft} \times 5,280 \text{ ft/mi} \times 1 \text{ ac/43,560 ft}^2 \\ &\times \frac{.75}{\text{efficiency factor}} = 5.14 \text{ ac/hr} \end{aligned}$$

$$\text{Hours Required} = \frac{\text{area to be graded}}{\text{ac}} \div \frac{\text{hourly production}}{\text{ac/hr}} = \text{hr}$$

Scarification

$$\begin{aligned} \text{Hourly Production} &= \frac{\text{mi/hr}}{\text{average speed}} \times \frac{\text{ft}}{\text{scarifier width}} \times 5,280 \text{ ft/mi} \times 1 \text{ ac/43,560 ft}^2 \\ &\times \frac{\text{efficiency factor}}{\text{efficiency factor}} = \text{ac/hr} \end{aligned}$$

$$\text{Hours Required} = \frac{\text{area to be scarified}}{\text{ac}} \div \frac{\text{hourly production}}{\text{ac/hr}} = \text{hr}$$

Total Hours Required

$$\text{Total Hours} = \frac{\text{grading hours required}}{\text{grading hours required}} + \frac{\text{scarification hours required}}{\text{scarification hours required}} = \text{hr}$$

Data Source(s):

Project: Pelican Point Quarry  
Date: 11/16/09  
Prepared by: B. Samsion

WORKSHEET 11A  
PRODUCTIVITY OF PUSH-PULL OR SELF-LOADING SCRAPER USE

Earthmoving Activity:

Redistribution of Topsoil

Characterization of Scraper Used (type, capacity, etc.):

Cat 623G Capacity 23 cy heaped

Description of Scraper Use (origin, destination, grade, haul distance, capacity, etc.):

Origin - Topsoil Stockpiles Dest - Quarry Floor 1% Grade

Productivity Calculations:

Avg. Dist = 1200 feet

$$\text{Cycle Time} = \frac{.90}{\text{load time (push-pull is per pair)}} \text{ min} + \frac{.6}{\text{loaded trip time}} \text{ min} + \frac{.70}{\text{maneuver and spread time}} \text{ min} + \frac{.5}{\text{return trip time}} \text{ min} = \frac{2.70}{\text{(push-pull is per pair)}} \text{ min}$$

$$\text{Hourly Production} = \frac{20.5}{\text{capacity}^*} \text{ LCY} \times 60 \text{ min/hr} \div \frac{2.70}{\text{cycle time}} \text{ min} \times \frac{.75}{\text{efficiency factor}} = \frac{342}{\text{(push-pull is per pair)}} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{118,580}{\text{volume to be handled}} \text{ LCY} \div \frac{342}{\text{net hourly production}} \text{ LCY/hr} = \frac{347}{\text{hr}}$$

\* The average of the struck and heaped capacities; use total for two scrapers for push-pull.

Data Source(s):

Project: Pelican Point Quarry  
 Date: 11/16/09  
 Prepared by: B. Shumaker

**WORKSHEET 11A  
 PRODUCTIVITY OF PUSH-PULL OR SELF-LOADING SCRAPER USE**

**Earthmoving Activity:**

Redistribution of Remaining Aggregate Stockpiles  
**Characterization of Scraper Used (type, capacity, etc.):**

Cat 623G Capacity 23 cy heaped

**Description of Scraper Use (origin, destination, grade, haul distance, capacity, etc.):**

Origin - Agg. Stockpiles      Dest. - Quarry Floor      Flat Grade

**Productivity Calculations:**

Aug. Dist - 1,800 feet

$$\text{Cycle Time} = \frac{.90}{\text{load time (push-pull is per pair)}} \text{ min} + \frac{1.5}{\text{loaded trip time}} \text{ min} + \frac{.70}{\text{maneuver and spread time}} \text{ min} + \frac{.4}{\text{return trip time}} \text{ min} = \frac{2.60}{\text{(push-pull is per pair)}} \text{ min}$$

$$\text{Hourly Production} = \frac{20.5}{\text{capacity}^*} \text{ LCY} \times 60 \text{ min/hr} \div \frac{2.60}{\text{cycle time}} \text{ min} \times \frac{.75}{\text{efficiency factor}} = \frac{473}{\text{(push-pull is per pair)}} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{114,400}{\text{volume to be handled}} \text{ LCY} \div \frac{473}{\text{net hourly production}} \text{ LCY/hr} = \frac{242}{\text{hr}}$$

\* The average of the struck and heaped capacities; use total for two scrapers for push-pull.

**Data Source(s):**

Project: Pelican Point Quarry  
 Date: 11-16-09  
 Prepared by: R. Suckman

**WORKSHEET 11A**  
**PRODUCTIVITY OF PUSH-PULL OR SELF-LOADING SCRAPER USE**

**Earthmoving Activity:**

Redist. of Topsoil on Benches

**Characterization of Scraper Used (type, capacity, etc.):**

Cat 623G Capacity 23 CY Heaped

**Description of Scraper Use (origin, destination, grade, haul distance, capacity, etc.):**

Origin - Topsoil Stockpile Dest. - Benches

**Productivity Calculations:**

Aug. Dist - 5,500' 8% Grade

$$\text{Cycle Time} = \frac{.90}{\text{load time (push-pull is per pair)}} \text{ min} + \frac{4.5}{\text{loaded trip time}} \text{ min} + \frac{.70}{\text{maneuver and spread time}} \text{ min} + \frac{2.0}{\text{return trip time}} \text{ min} = \frac{8.1}{\text{(push-pull is per pair)}} \text{ min}$$

$$\text{Hourly Production} = \frac{20.5}{\text{capacity}^*} \text{ LCY} \times 60 \text{ min/hr} \div \frac{8.1}{\text{cycle time}} \text{ min} \times \frac{.75}{\text{efficiency factor}} = \frac{152}{\text{(push-pull is per pair)}} \text{ LCY/hr}$$

$$\text{Hours Required} = \frac{19360}{\text{volume to be handled}} \text{ LCY} \div \frac{152}{\text{net hourly production}} \text{ LCY/hr} = \frac{127}{\text{hr}}$$

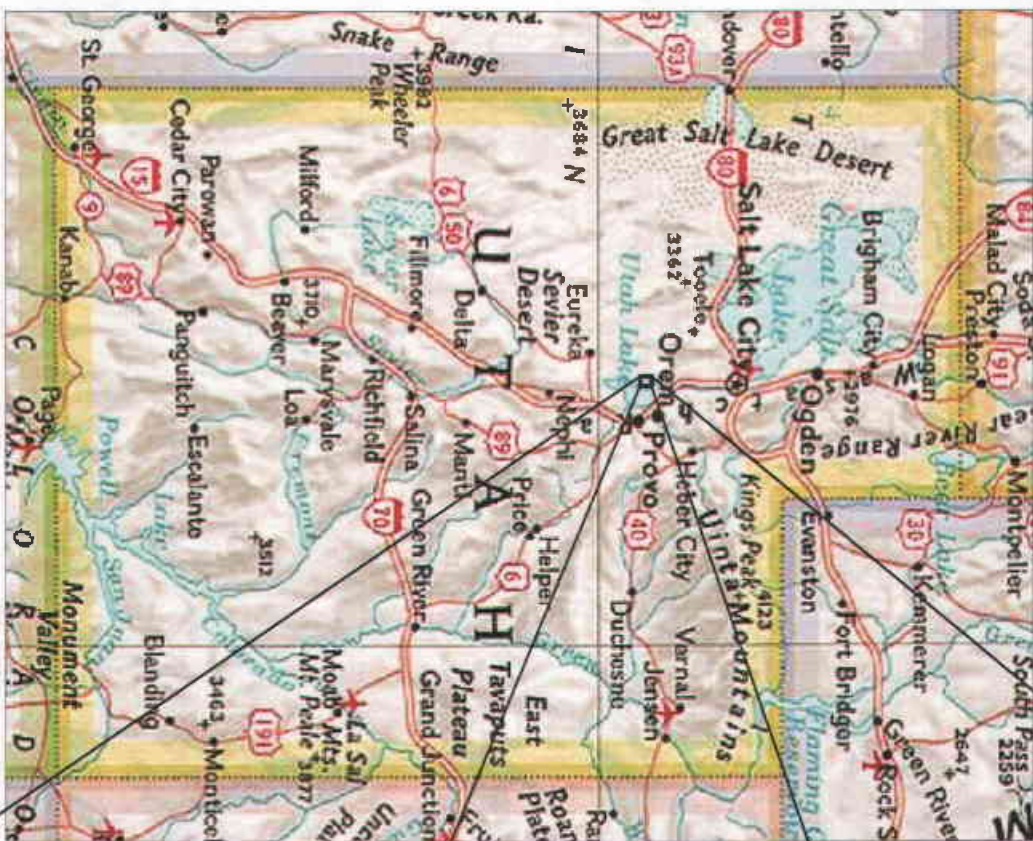
\* The average of the struck and heaped capacities; use total for two scrapers for push-pull.

**Data Source(s):**





SCALE: 1" = 2000'



Drawn:	B SUMSION
Checked:	BS /AS/CC
Approved:	
Date:	10-21-09
Dwg. No.	

TITLE:	Geneva Rock Pelican Point Quarry DOGM NOI
ISSUED FOR INTERNAL REVIEW	
Revision:	00

Engineer:

NO.	DATE:	DESCRIPTION:	BY:

Geneva Rock Pelican Point Quarry  
Base Map  
Figure 1



Geneva Rock Products, Inc.  
1556 West 400 North  
Orem, Utah 84057  
801-765-7800



This page is a reference page used to track documents internally for the Division of Oil, Gas and Mining

Mine Permit Number M/049/0011 Mine Name Pelican Point Quarry  
Operator Geneva Rock Date Rec'd Dec 3 2009  
TO \_\_\_\_\_ FROM \_\_\_\_\_

☐ CONFIDENTIAL ☐ BOND CLOSURE ☒ LARGE MAPS ☐ EXPANDABLE  
☐ MULTIPUL DOCUMENT TRACKING SHEET ☐ NEW APPROVED NOI  
☐ AMENDMENT ☐ OTHER \_\_\_\_\_

Description

YEAR-Record Number

☐ NOI ☒ Incoming ☐ Outgoing ☐ Internal ☐ Superceded  
Map - Alta Survey 7-17-07 2009-0005  
\* End of document.

☐ NOI ☐ Incoming ☐ Outgoing ☐ Internal ☐ Superceded

☐ NOI ☐ Incoming ☐ Outgoing ☐ Internal ☐ Superceded

☐ NOI ☐ Incoming ☐ Outgoing ☐ Internal ☐ Superceded

☐ TEXT/ 8 1/2 X 11 MAP PAGES ☐ 11 X 17 MAPS ☐ LARGE MAP

COMMENTS: \_\_\_\_\_

CC: \_\_\_\_\_



Drawn: B SUMSION  
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Approved:  
Date: 11-11-08  
Dwg. No.

TITLE:  
**Geneva Rock Pelican  
Point DOGM NOI**  
ISSUED FOR INTERNAL REVIEW  
Revision: 00

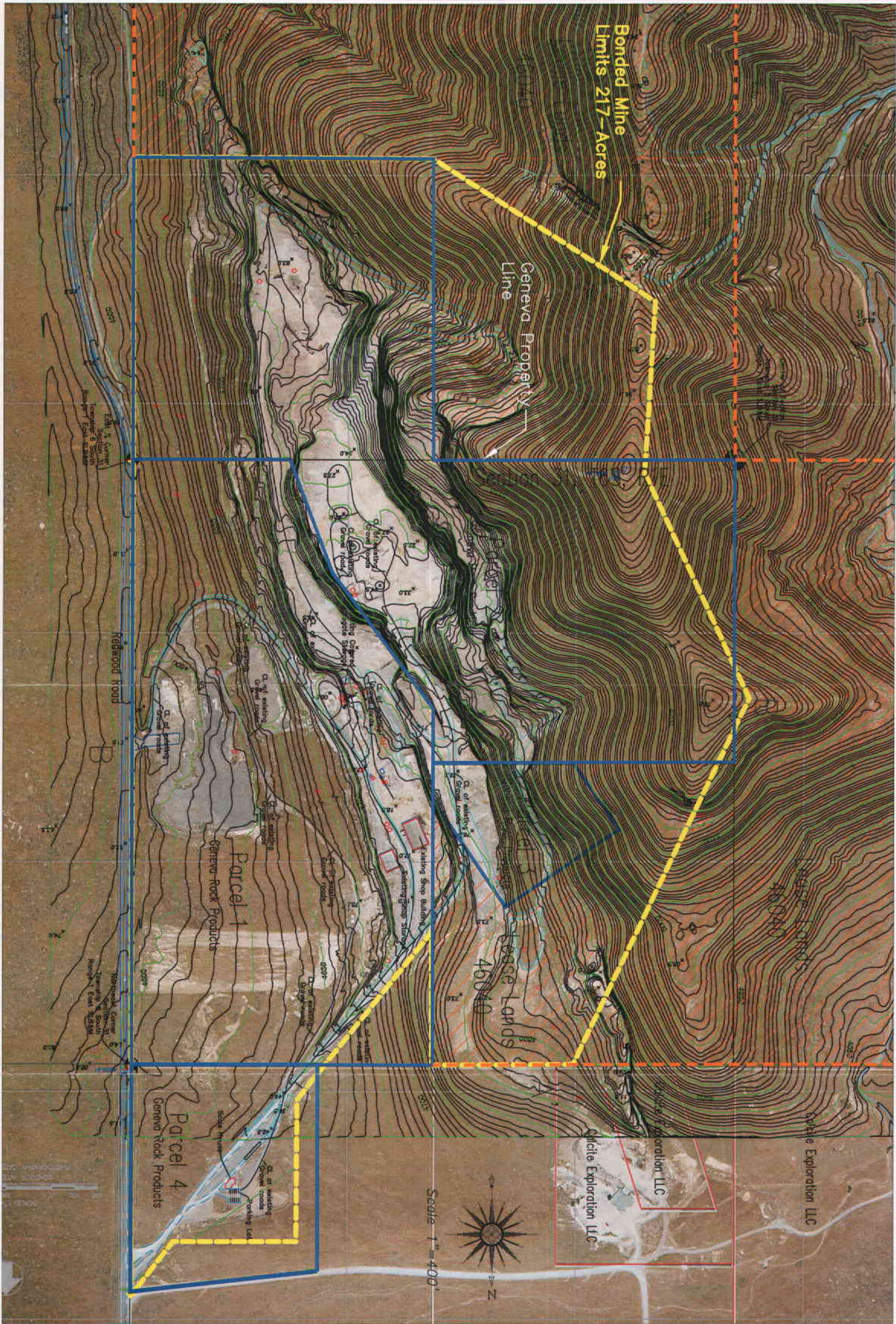
Engineer:  
NO. DATE DESCRIPTION BY:

**Geneva Rock  
Pelican Point Quarry  
Existing Contours map  
Figure 3**



Geneva Rock Products, Inc.  
1556 West 400 North  
Orem, Utah 84057  
801-763-7800





Drawn: B SUMSON  
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Approved:  
Date: 11-11-09  
Dwg. No.

TITLE:  
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Point DOGM NOI**  
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Revision:  
00

Engineer:

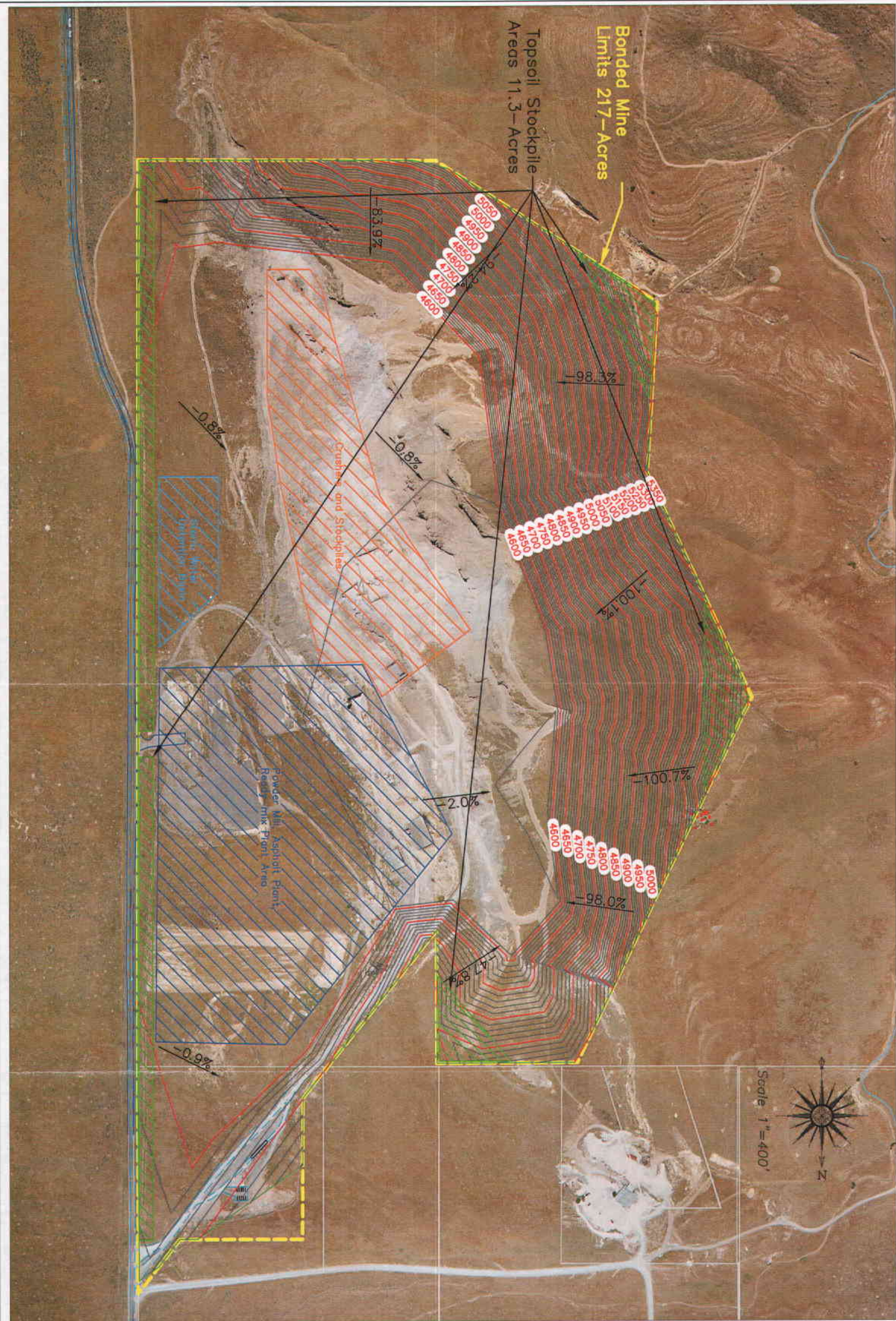
NO.	DATE	DESCRIPTION	BY:

**Geneva Rock  
Pelican Point Quarry  
Existing Contours map  
Figure 3**



Geneva Rock Products, Inc.  
1556 West 400 North  
Orem, Utah 84057  
801-765-7800





Drawn: D. SWANSON  
 Checked: BS/CC  
 Approved:  
 Date: 10-21-09  
 Draw. No.

**TITLE:**  
**PELICAN POINT**  
**MINE PLAN**  
**ISSUED FOR INTERNAL REVIEW**

**Revisions:**  
 00

**Engineer:**

NO.	DATE	DESCRIPTION	BY

**Geneva Rock DOGM**  
**NOI Pelican Point Quarry**  
**Figure 4**



**Geneva Rock Products, Inc.**  
 1556 West 400 North  
 Orem, Utah 84057  
 801-765-7800





Drawn: B SUMMON  
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Engineer:				
NO.	DATE:	DESCRIPTION:	BY:	

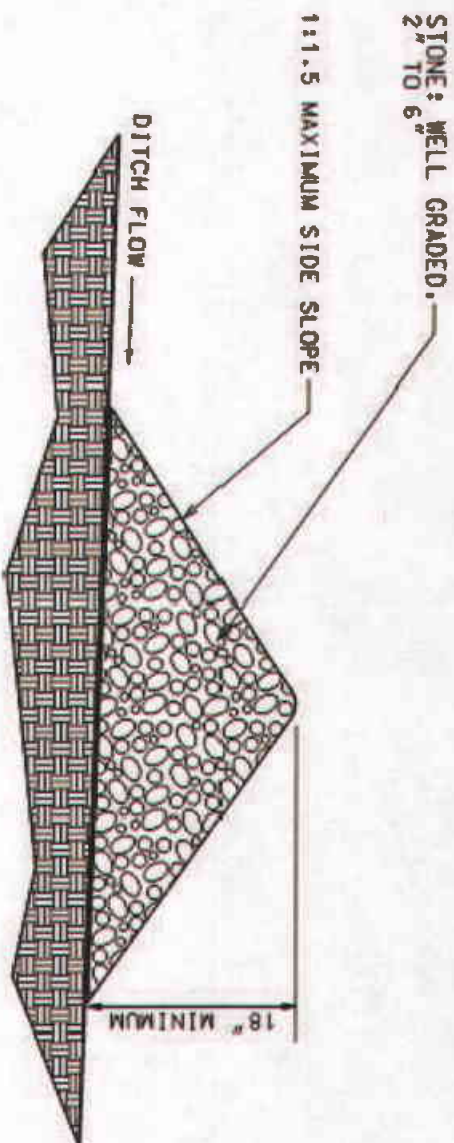
**Geneva Rock  
 Pelican Point Quarry  
 Reclamation Plan  
 Figure 3**



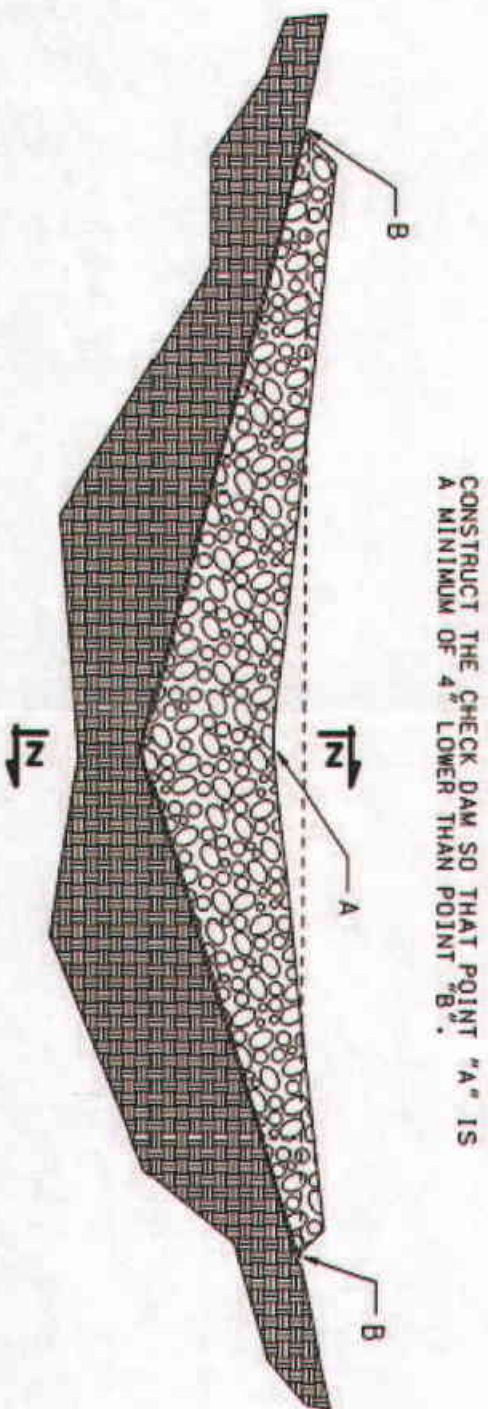
Geneva Rock Products, Inc.  
 1556 West 400 North  
 Orem, Utah 84057  
 801-765-7800



# GENEVA ROCK - PELICAN POINT QUARRY EROSION CONTROL BMP DETAILS



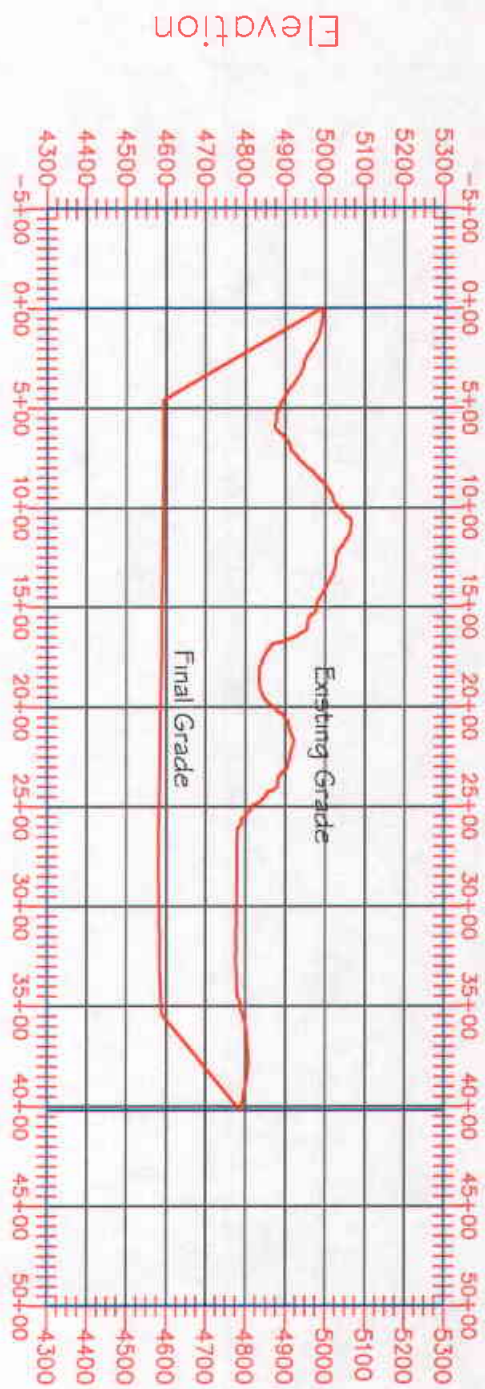
SECTION Z - Z



STONE CHECK DAM

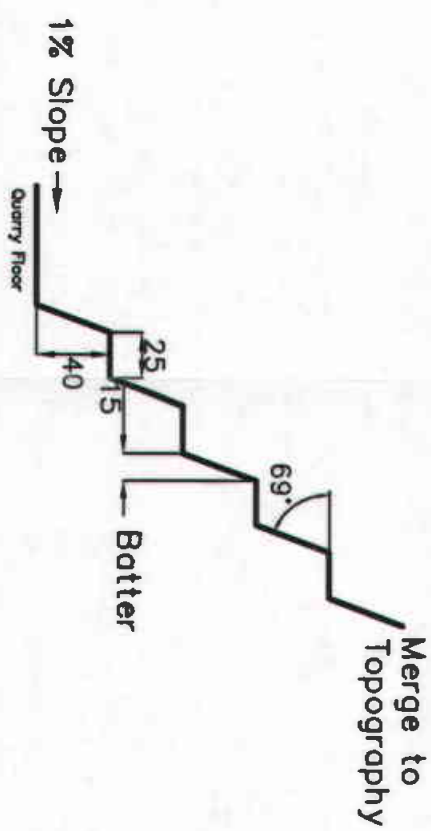
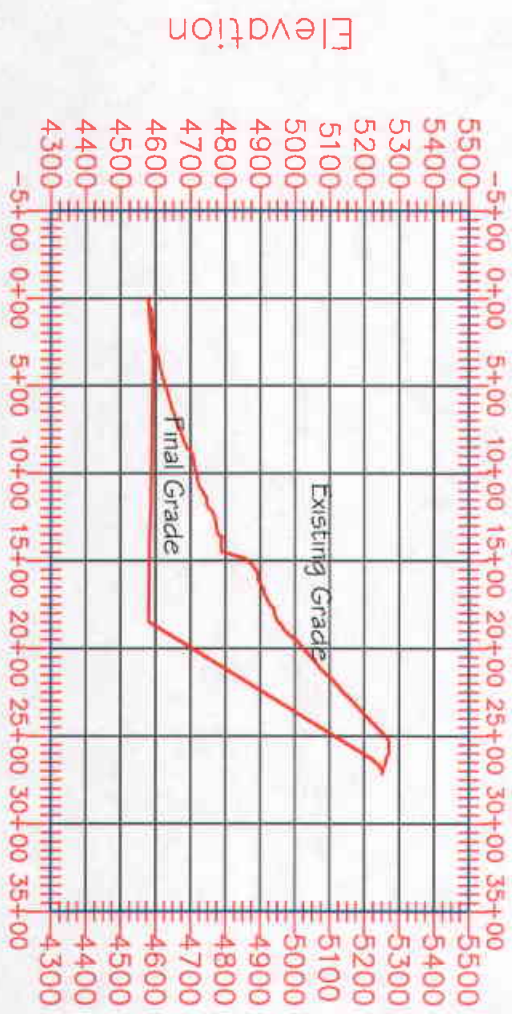
## Section A-A' PROFILE

Station



## Section B-B' PROFILE

Station




## HIGHWALL-BENCH DETAIL

## Merge to Topography

**Batter**

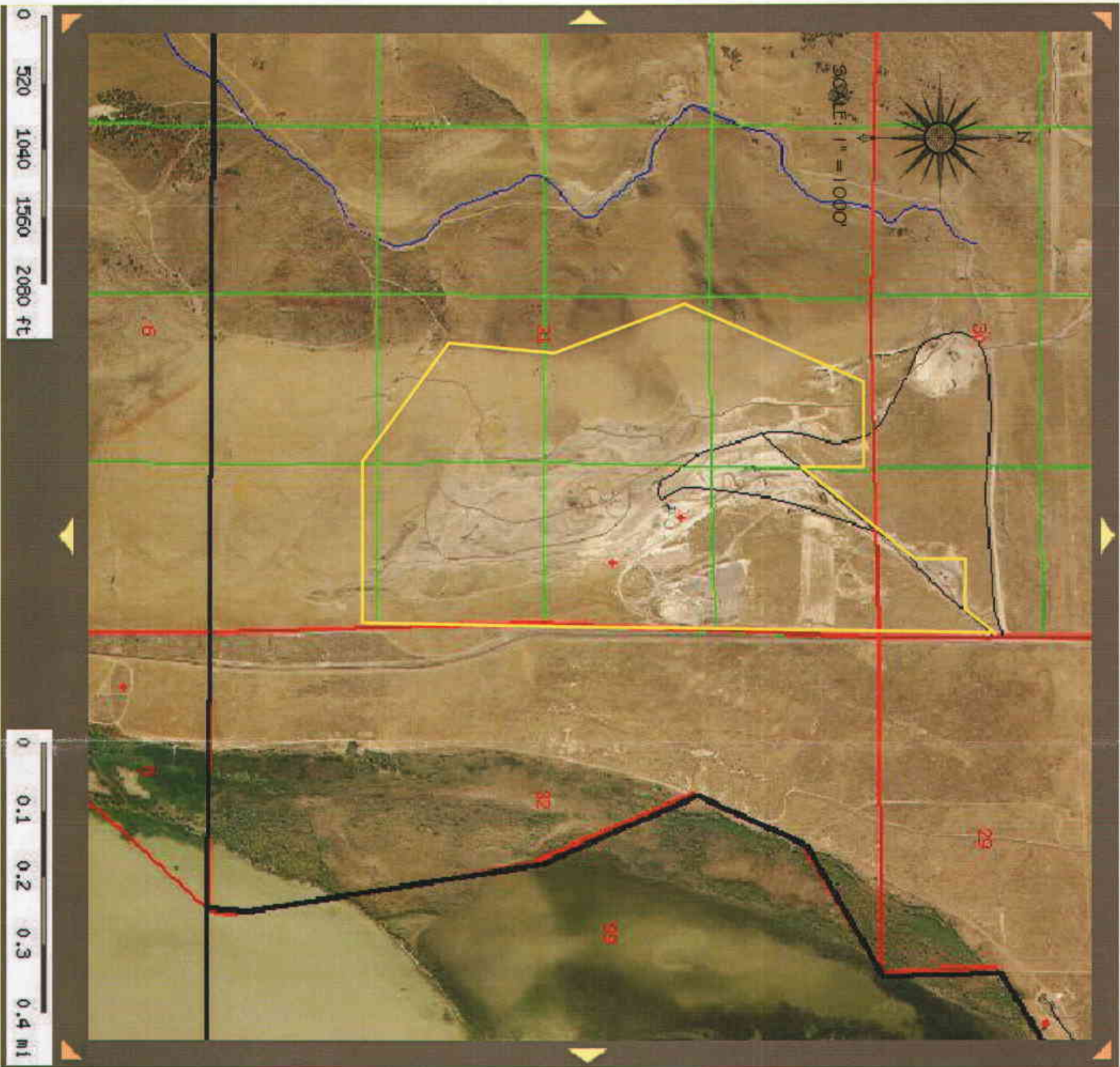
Quarry Floor

Drawn: 8 SUMJON	TITLE: Geneva Rock Pelican Point Quarry		Engineer:				Geneva Rock Pelican Point Quarry X- Sections Figure 7	 Geneva Rock Products, Inc. 1556 West 400 North Orem, Utah 84057 801-765-7800
Checked: BS /AS/DC	Quarry							
Approved:	DOGM NOI							
Date: 11-11-09	ISSUED FOR INTERNAL REVIEW	Revision:						
Dwg. No.		00	NO.	DATE:	DESCRIPTION:	BY:		



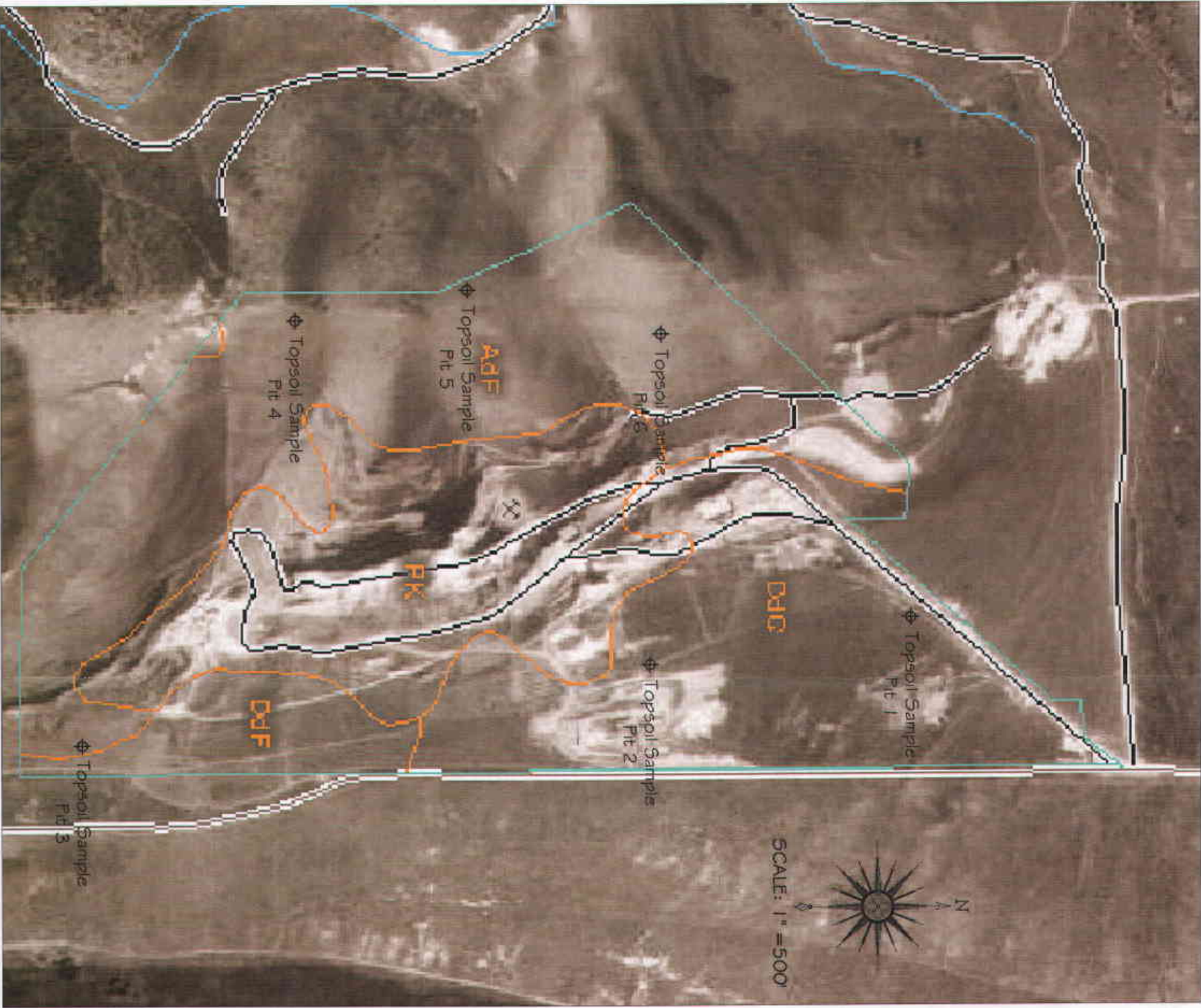
### Legend

- Hells
- Geologic Logs
- Search Boundary
- Townships
- Sections
- Forties
- Primary Route
- Secondary
- Rural Roads
- Minor Roads
- Stream
- Ditch or Canal
- Wash or Ephemeral Drain
- Intermittent Stream
- Aqueduct

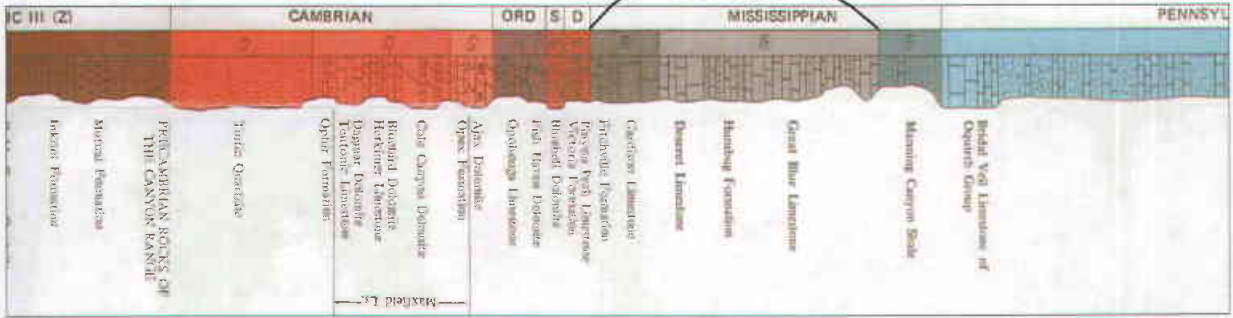
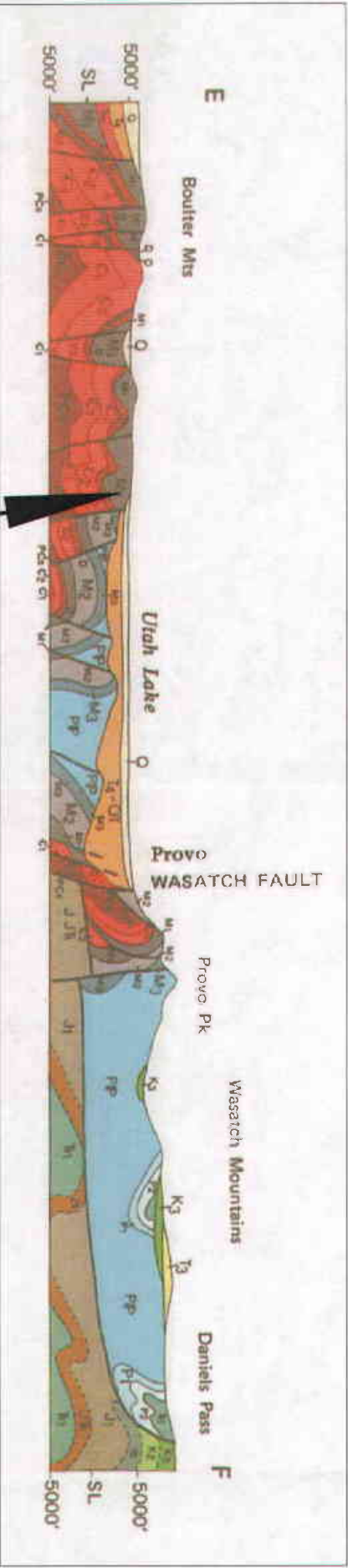




Map Unit Legend				
				⑧
				⑦
Fairfield-Nephi Area, Utah (UT608)				
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
AdF	Antoft, moist-Rock outcrop complex, 30 to 70 percent slopes	81.3	37.0%	
DdC	Donnardo stony loam, 2 to 8 percent slopes	66.5	30.2%	
DdF	Donnardo stony loam, 25 to 40 percent slopes	14.2	6.5%	
PK	Pits-Dumps complex	58.0	26.4%	
Totals for Area of Interest		220.0	100.0%	







Drawn: B SUMSON  
Checked: BS /AS/CC  
Approved:  
Date: 10-21-09  
Dwg. No.

TITLE: Geneva Rock Pelican Point Quarry DOGM NOI  
ISSUED FOR INTERNAL REVIEW  
Revision: 00

Engineer:  
NO. DATE DESCRIPTION BY:

Geneva Rock Pelican Point Quarry  
Geology Map  
Figure 9



Geneva Rock Products, Inc.  
1556 West 400 North  
Orem, Utah 84057  
801-765-7800



This page is a reference page used to track documents internally for the Division of Oil, Gas and Mining

Mine Permit Number M104910011 Mine Name Pelican Point Quarry  
Operator Geneva Rock Date Rec'd Dec 3 2009  
TO \_\_\_\_\_ FROM \_\_\_\_\_

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☐ AMENDMENT ☐ OTHER \_\_\_\_\_

Description

YEAR-Record Number

☐ NOI ☒ Incoming ☐ Outgoing ☐ Internal ☐ Superceded  
Cultural Survey 2009-0001

**CONFIDENTIAL**

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☐ NOI ☐ Incoming ☐ Outgoing ☐ Internal ☐ Superceded

☐ NOI ☐ Incoming ☐ Outgoing ☐ Internal ☐ Superceded

14 TEXT/ 81/2 X 11 MAP PAGES ☐ 11 X 17 MAPS ☐ LARGE MAP

COMMENTS: \_\_\_\_\_

CC: \_\_\_\_\_

STORM WATER  
MANAGEMENT PLAN

PELICAN POINT QUARRY  
Utah County, Utah

Prepared for:  
GENEVA ROCK PRODUCTS, INC



Prepared by



CLYDE COMPANIES INC.

CLYDE COMPANIES INC.  
730 NORTH 1500 WEST  
OREM, UT 84057  
(801) 802-6900

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## APPENDICES

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## 1.0 BACKGROUND

### 1.1 UPDES Permit

In 1972, Congress passed the Federal Water Pollution Control Act (FWPCA), also known as the Clean Water Act (CWA), to restore and maintain the quality of the nation's waterways. The ultimate goal was to make sure that rivers and streams were fishable, swimmable, and drinkable. In 1987, the Water Quality Act (WQA) added provisions to the CWA that allowed the EPA to govern storm water discharges from industrial activities. EPA published the final notice for Phase I of the Multi-Sector General Storm Water Permit program (Federal Register Volume 60 No. 189, September 20, 1995, page 50804) in 1995 which included provisions for the development of a Storm Water Pollution Prevention Plan (SWPPP) by each industrial facility discharging storm water, including ready mix concrete facilities, asphalt production facilities, and sand and gravel mining operations.

The Utah Division of Water Quality developed the state-wide Utah Pollutant Discharge Elimination System (UPDES) program based on the federal standards. Utah is now in charge of its own state program – that is, it has “primacy” over the federal program.

The UPDES Permit is the mechanism Utah uses to regulate “point-source” discharges<sup>1</sup>, including storm water discharges, to surface waters of the State. The SWP3 provides a site-specific, operator-driven set of pollution control standards for any discharges that occur at a particular industrial facility. A state-side “General Industrial Storm Water Permit” provides a blanket UPDES permit to those operators who certify that their SWP3 meets the standards set out in the UPDES program. The program has different standards depending on the industrial sector involved.

### 1.2 Waiver

**This facility does not discharge storm water and is not required to obtain a UPDES permit.** The facility shall be inspected and evaluated for the necessity of a permit whenever:

1. There is a significant change in the acreage disturbed; or a significant change to the design, construction, operation, or maintenance of on-site facilities that could have a significant effect on the quantity of runoff;
2. The inspection reveals a new discharge of water or one that has not previously been recognized by facility personnel.

If the evaluation reveals that the facility is not longer capable of containing runoff, and a significant discharge is found, then a UPDES permit shall be acquired and a SWP3 shall be implemented. The SWP3 shall be specific to the site and follow the guidelines as outlined for the sector under which the facility operates (J: Sand and Gravel Operations).

## 2.0 STORM WATER MANAGEMENT PLAN (SWMP)

Clyde Companies has prepared a general Storm water Management Plan that is adaptable to most Geneva Rock facilities. Development, implementation, and maintenance of this Storm water Management Plan will provide Geneva Rock with the tools to reduce pollutants contained in storm water at the facility.

The primary goals of the SWMP are to:

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<sup>1</sup> A “point source” discharge is a flow of water or effluent that enters a stream or river from a particular identifiable location, rather than “non-point source” discharge, such as overland flow, which comes from several locations, such as runoff from an agricultural field or pasture.

- Identify potential sources of pollutants that affect storm water at the site;
- Describe the practices that will be implemented to prevent or control the release of pollutants in storm water;
- Evaluate the plan's effectiveness in reducing the pollutant levels in storm water.
- Train employees on effective storm water management

## 2.1 Facility Contacts

A list of facility contacts along with emergency reporting procedures can be found in **Appendix A** of the document.

## 2.2 Facility Maps

**Figures Section** contains maps specific to this facility which show: location, size, operations, and runoff environment.

## 3.0 POLLUTANT SOURCES

### 3.1 Inventory of Materials

Materials used by the facility that have the potential to be present in storm water runoff are listed in the following table. This table includes information regarding material type, chemical and physical description, and the specific regulated storm water pollutants associated with each material.

Trade Name Material	Chemical/Physical Description	Storm Water Pollutants
Limestone, marl, chalk	White solid	Calcium carbonate, turbidity
Lime	White to slightly yellowish solid	Calcium Oxide
Clay, sand, shale	Solid	Silicon, suspended solids, turbidity
Bauxite, iron ore, recycled metals	Solid	Aluminum, iron, tricalcium aluminate, tetracalcium aluminoferrite
Silicates	Fine powder	Dicalcium and tricalcium silicates
Gypsum (calcium and sulfur based mineral)	White solid	Calcium sulfate
Waste fuel (motor oil, spent solvents, printing inks, paint residues, cleaning fluids, scrap tires)	Various colored liquids, pastes, and solids, petroleum hydrocarbons	Mineral oil, petroleum distillates

Workability agents, superplasticizers	Solid or aqueous solutions	Sulfonated melamine-formaldehyde, sulfonated naphthalene, formaldehyde
Air-entraining admixtures	Liquid	Alkyl benzene sulfonates, methyl ester-derived cocamide diethanolamine
Admixtures	Free flowing granules, gases, solids, liquids	Calcium chloride, ethanol amine, diethanolamine
Wastewater recovered from truck cleaning	Water	Oil & grease, solids, hydrochloric acid
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE
Diesel Fuel		Nonane, Ethyltoluenes, Naphthalene

### 3.1.1 Practices used to minimize contact of materials with rainfall and runoff

- Material piles are kept in a compact shape to minimize surface area.
- Materials are stored on flat areas that do not pond, and on areas that drain into the drainage system whenever possible. No materials are stored within a drainage area.

### 3.1.2 Existing nonstructural controls that reduce pollutants in storm water runoff

- Regular maintenance of machinery and equipment minimizes spills and leaks.
- Quarterly inspections of fluid containers to check for leaks and deteriorations. Any leaks identified during the inspection will be immediately cleaned using a dry absorbent.
- An emergency spill kit with the supplies necessary to clean a fuel spill (a broom, a shovel, sand, saw dust, a 55-gallon drum) is stored in a convenient location near the fueling station area and in the shop so they will be immediately available in the event of a spill.
- A spill prevention plan is implemented as a resource to prevent spills, or in the event of a spill, to aid in the clean-up process. The plan addresses proper procedures and maintenance of the fuel and oil products and equipment, and identifies supplies and equipment for quick spill response.

### 3.1.3 Structural controls that reduce pollutants and storm water runoff

Structural controls that reduce contaminants in storm water runoff include: oil/water separators, retention ponds, berms/swales, and secondary containment for fuel/oil (see SPCC plans).

## 3.2 Risk Identification and Summary of Potential Pollutant Sources

### 3.2.1 Loading and unloading operations

- Sediment can fall from loaders while dump trucks are being loaded with soil or aggregate materials. Minor leaks can drain from equipment used at the loading site.



### **3.2.2 Outdoor manufacturing/process activities**

- *Parking areas:* Employees park their vehicles in the parking lot area. Storm water from this area can be potentially contaminated by leaking fluids from the parked vehicles. These contaminants may contain mineral oil, petroleum, distillates, benzene, ethyl benzene, toluene, xylene, and MTBE.
- *Fueling areas:* Fueling activities are performed at the fuel storage areas. Storm water from these areas can be potentially contaminated by fluids leaking from the trucks during refueling activities and spills and leaks at the fueling station. These contaminants may contain mineral oil, petroleum distillates, benzene, ethyl benzene, toluene, xylene, and MTBE.
- *Sand and Gravel Truck Loading/Unloading areas:* Trucks unload sand and gravel in the sand and gravel truck unloading area. Storm water from this area can be potentially contaminated by fluids leaking on to the gravel surface from the trucks and by sand and gravel spills. These contaminants may contain mineral oil, benzene, toluene, xylene, MTBE, silicon, dissolved solids, suspended solids, calcium sulfate, tricalcium aluminate, and tetracalcium aluminoferrite.
- *Truck Washout area:* Truck drums and the exterior of trucks are cleaned in the truck washout area. Storm water from this area can be potentially contaminated by waste water from truck cleaning operations and by leaking fluids from trucks. These contaminants may contain mineral oil, benzene, MTBE, silicon, suspended solids, calcium sulfate, calcium oxide, sulfonated melamine-formaldehyde, alkyl benzene sulfonates, and methyl-ester-derived cocamide diethanolamine.

### **3.2.3 Dust/particle generating activities**

- Dust is generated as materials are loaded/unloaded, moved from one stockpile to another, and transferred by conveyor belt. Dust is also generated by vehicles traveling on the unpaved roads between facility operations. All roads and materials are sprayed to control fugitive dust and all activities occur within the perimeter of the facility, so the sediments that may contaminate storm water runoff will remain onsite.

### **3.2.4 On-site waste disposal practices**

- Sources of waste include office waste, employee lunch waste, small lubricant cans and buckets, cloths used for cleaning, etc... Any of these waste sources could become scattered across the site due to wind, inadequate disposal containers or sloppy employee housekeeping. Trash cans are provided and emptied on a regular basis to ensure no storm water is adversely affected.

### **3.2.5 Miscellaneous liquid sources/activities**

- Vehicle maintenance takes place in a concrete floored shop when available. All in-shop oil is stored on spill pallets or within a secondary containment area. To avoid spills, all used oil filters, fuel filters, etc. are drained to drums for recycling prior to disposal; in some shops a lube pit is used during maintenance to catch spills; and dry cleanup methods are employed to minimize the chance that storm water will contact maintenance materials. A spill kit is maintained in case a spill occurs during maintenance activities.

## **4.0 MEASURES AND CONTROLS**

This section discusses the storm water management controls implemented at the facility and describes the management practices selected to address the areas of concern identified in Section 3 of this SWMP.

### **4.1 Good Housekeeping**

Good housekeeping Best Management Practices (BMPs) refers to ongoing or regular practices that ensure that areas of the facility with a potential to contribute pollutants to storm water are kept clean and orderly. The following comprise some of the good housekeeping practices that are routinely followed:

- Litter is controlled through employee awareness, trash receptacle placement, and frequent cleanup, among other controls. New employees are instructed in litter control as part of their initial Geneva training. Wind blown litter and other debris is periodically cleaned up from the entire facility.
- Servicing of vehicles and mobile equipment is conducted within the main shop area. Used oil is stored in a tank and is then recycled. All other new and used lubricants, liquids and supplies are inventoried and stored in tanks and drums that are within spill containment.
- Fueling takes place in designated areas away from surface water collection areas.
- To reduce the chance of spills during fueling, the equipment operator remains at the fueling point while the tank is being filled. All valves are opened immediately prior to, and closed immediately after, fueling.
- Tanks and drums are refilled and/or re-supplied between once a day and once a week by a contractor. All tanks and drums are secondarily contained.
- A spill kit is maintained on site to absorb any spilled fuel
- A detailed description of preventive and clean-up measures for fuel and oil spills can be found in the SPCC which is kept on site at all times.

### **4.2 Preventive Maintenance**

- Vehicles, equipment, and machinery are kept in good working order so that their likelihood of discharging fluids that could contact storm water is minimized.
- Water systems used in dust control are regularly maintained to avoid small, chronic leaks or larger-volume releases.
- Earthen slopes and retention berms/swales are maintained in order to reduce erosion and storm water transport of their materials as well as continue to serve their intended function.
- The inspection procedures discussed in Section 4.4 ensure that items requiring maintenance are identified. If maintenance is needed, items are repaired as soon as practicable. During the next inspection, special attention is paid to those items in order to verify that maintenance activities were adequately completed.

### **4.3 Other Controls**

All wastes created during operations are removed from the area and disposed of appropriately. No trash or other pollutants will be buried on site. All applicable Federal, State and/or local waste disposal regulations will be complied with.

Any gasoline, diesel fuels, lubricants, and other potential pollutants stored on the property are stored in double-walled tanks. Grease, oil, and lubricants are stored within an enclosed shop and are inventoried on a regular basis.

#### **4.4 Inspections**

Once a quarter, material handling and storage areas, drum storage areas, conveyors, hoppers, and stockpile areas are inspected to assure that there are no leaks, fuel or oil deposition areas, or other signs that hydrocarbons are uncontrolled. Storm water control structures and equipment such as berms, sediment control and collection systems, and containment structures are also inspected to ensure continued proper operation. Inspections are conducted quarterly during each of the following periods: January to March, April to June, July to September, and October to December.

A blank inspection report form is located in **Appendix C** and will be completed and signed by the inspector at the time of each inspection. If the inspection report describes deficiencies in pollution control equipment, structures, or procedures, the deficiencies will be corrected as soon as possible following the inspection, and prior to the next anticipated significant storm event. A description of all actions and shall be documented and retained as part of this plan. Geneva will retain copies of the completed inspection reports (**Appendix D**) for a minimum of three years from the date of inspection.

As stipulated in the SPCC Plan, fuel and oil products, and their containment systems will be inspected in accordance with the SPCC Plan inspection schedule.

#### **4.5 Employee Training**

An employee training program will be developed and implemented to educate employees about the requirements contained in these plans and other plans relating to storm water and spill prevention. This education program will include the following:

- Background on the components and goals of storm water pollution prevention
- Hands-on training in spill prevention and response
- BMPs to be used at the facility
- Education on storm water pollution prevention
- Question and answer session
- Other topics considered pertinent during each session

All new employees will be trained within one week of their start date. Additionally, employees will be required to participate in an annual refresher training course. An employee sign-in sheet for the refresher course can be found in **Appendix E** of this document. The training program will be reviewed annually to determine its effectiveness and to make any necessary changes to the program. Training records shall be retained for a minimum of three years.

#### **4.6 Record Keeping and Internal Reporting Procedures**

Records described in this plan must be retained on site for a minimum of 3 years, and shall be made available to the state or federal compliance inspection officer upon request. Additionally, employee training records shall also be maintained.

## APPENDIX A

### FACILITY CONTACTS AND REPORTING PROCEDURES

#### CONTACT LIST

*Dixon*  
*west* *Bringhurst*  
ED CLAYSON, ~~SOUTH AREA~~ CRUSHER SUPERINTENDANT  
15800 SOUTH 500 WEST  
BLUFFDALE, UT 84065

OFFICE 801-281-7956 7950  
CELL 801-592-2003 633-6669  
EMAIL - ~~ECLAYSON~~@GENEVAROCK.COM

*d bringhurst*

CLYDE SORENSEN, AGGREGATE PRODUCTION MANAGER  
15800 SOUTH 500 WEST  
BLUFFDALE, UT 84065

OFFICE 801-281-7957  
CELL 801-633-6667  
EMAIL - CSORENSEN@GENEVAROCK.COM

CARL CLYDE, V.P. GRAVEL & ASPHALT MATERIALS  
15800 SOUTH 500 WEST  
BLUFFDALE, UT 84065

OFFICE 801-281-7979  
CELL 801-592-5608  
EMAIL - CCLYDE@GENEVAROCK.COM

These are  
undeliverable  
addresses by  
USPS.

P.O. Box 538  
Orem, UT 84059

REPORTING PROCEDURE - ANY INCIDENCE OF STORM WATER CONTAMINATION OR DISCHARGE OF STORMWATER FROM THE PROPERTY SHOULD BE REPORTED IMMEDIATELY TO ONE OR MORE OF THE ABOVE INDIVIDUALS.

## **APPENDIX B**

### **FACILITY MAPS**

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# **APPENDIX C**

## **INSPECTION REPORT FORMS**

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# Quarterly Visual Inspection Form

Geneva Rock Products

Location:

Inspectors Name:

Inspection Date:

Inspection Time:

Directions: Perform a walk-through of the facility when rain is not falling and check YES or NO for each item. Record any corrective actions that are needed. Review the SWPPP and complete Section 4. Describe the corrective actions that were taken in Section 5.

1. Housekeeping	Yes	No	Corrective Actions/Maintenance Required
- Litter is picked up?			
- Trash receptacles no overflowing?			
2. Materials and Equipment	Yes	No	Corrective Actions/Maintenance Required
- Aggregate material storage piles located within the batch plant?			
- Process and mobile equipment positioned within the batch plant?			
- Obsolete equipment located in proper storage area?			
- Any signs of leakage from process, mobile, and obsolete equipment?			
- Preventive maintenance has been performed on mobile equipment?			
- Silos and storage tanks no leaking?			
- Secondary containment area in good condition (i.e., no cracks, no signs of leaks)?			
3. General	Yes	No	Corrective Actions/Maintenance Required
- Any evidence of erosion/			
- Perimeter berms in good condition?			
- Roads and parking lots in good condition (i.e., no erosion or ruts)?			
- Any new problem areas or potential pollutant sources?			
4. SWPPP Review			
- If deficiencies were noted above, are changes to the SWPPP required?	YES	NO	
- If yes, describe the revisions that were made:			
5. Corrective Actions Taken			
For the corrective Actions/Maintenance Required that were identified above, enter the action that was taken and the date:			





## **APPENDIX D**

### **COMPLETED INSPECTION REPORT FORMS**

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## **APPENDIX E**

### **EMPLOYEE TRAINING RECORDS**

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## SWMP Training Sign-In Sheet

Date

Employee Name

Employee Signature